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Article I.

A Contribution to the Study of Diphtheria of the Œsophagus; with the Report of a Case. By H. D. Fry, M.D., Washington, D. C.

Diphtheria of the œsophagus is a rare affection. According to Rilliet and Barthez,[1] this part of the alimentary canal is always unaffected. Such, they say, has been the case in a number of observations published by authors, notwithstanding that Bretonneau has observed two cases in which false membrane penetrated into the œsophagus. Guersant,[2] writing in 1835, states that he has several times found the stomach partly covered with a false membrane, but diphtheria of the œsophagus, he thinks, must be unusual, because he has never met with a case, nor does he know of any author who has. Bouchut,[3] Espagne,[4] Greenhow,[5] and others consider the affection, but do not appear to have met with any cases.

Espagne quotes two cases, one communicated by Dr. Albert Puech, which occurred in a child suffering from pneumonia, and the other, reported by Vidal, was developed in a typhoid fever patient. Wilks and Moxon,[6] West,[7] Rechou,[8] Laboulbène,[9] and Morell Mackenzie,[10] have had a few

[1] Maladies des Enfants, t. i. p. 323.
[2] Memoirs on Diphtheria. Sydenham Society Translation, London, 1859, p. 220.
[3] Ibid., p. 277.
[4] De la Diphthérite, Montpellier, 1860, p. 102.
[5] On Diphtheria, by E. H. Greenhow, M.D., New York, 1861, p. 112.
[6] Pathological Anatomy, London, 1875, p. 365.
[7] Diseases of Infancy and Childhood, London, 1874, 6th edit., p. 426.
[8] Journal Générales de Médecine, Paris, 1805, vol. xxii. pp. 5 and 6.
[9] Nouveau Eléments d'Anatomie Pathologique, Paris, 1879, p. 85.
[10] Manual of Diseases of the Throat and Nose, Wm. Wood & Co., New York, 1884, pp. 48 and 49.

cases fall under their observation. West says: "In two instances, though the throat was free of false membrane, the œsophagus was lined by it for two-thirds of its length; the subjacent mucous surface showing but very slight increase of vascularity, and the exudation being but very loosely connected with it." Rechou, describing a series of *post-mortem* examinations made upon patients who had died of diphtheria, states that "in the last two, the stomach, the œsophagus, and the tongue were covered with a membrane of the same nature as that which occurs in the bronchi, very adherent, almost solid." Laboulbène has seen three cases, Wilks and Moxon two.

Mackenzie has observed two cases, "one in a child aged three, in which the upper third of the œsophagus was covered with a thick adherent membrane, a similar deposit being present in the pharynx. The other case was that of a boy, aged six, whose pharynx, posterior nares, larynx, and trachea were covered with false membrane, while the whole of the œsophagus to within an inch of the cardia was similarly coated." Wagner,[1] author of *General Pathology*, says the disease seldom appears in the œsophagus, and he quotes West as having stated that he found this part unaffected even when the mucous lining of the stomach was covered with pseudo-membrane. Wagner himself had seen only two instances in which it extended over the *uppermost part* of the œsophagus. Jones and Sieveking[2] also mention that this part of the tube is sometimes involved.

Jacobi[3] takes exception to the statement of Zenker and Ziemssen that diphtheritic inflammation ceases abruptly at the inferior extremity of the pharynx. He believes that in general diphtheria it is common for the exudation to invade the upper part (from one-half to one inch) of the œsophagus. The authors whom he thus criticizes express the view[4] that the œsophagus presents a high degree of immunity against diphtheritic invasion. As a rule, they say, even in the most severe cases, the process ends on the lower margin of the pharynx, and leaves the œsophagus entirely free. This immunity is strikingly illustrated by those cases in which the diphtheria first attacks the pharynx and larynx, and then invades the mucous membrane of the stomach, and leaves the œsophagus untouched. They admit, however, that in rare cases the disease extends from the pharynx to the upper part of the œsophagus, or even as far as the cardia.

These opinions conclusively demonstrate the infrequent occurrence of diphtheritic œsophagitis. One other proof is brought forward. An examination of the catalogues of a number of medical museums reveals but two

[1] Ziemssen, Cyclop., vol. vi. p. 942.
[2] Pathological Anatomy, London, 1875, p. 551.
[3] Treatise on Diphtheria, New York, 1880, p. 83.
[4] Ziemssen, Cyclop., German edition, 1878, pp. 139–141.

which possess any specimens of this nature. Specimen No. 2292[1] of the Museum of the Royal College of Surgeons of England was presented by Dr. Goodhart in 1875. It is

"a larynx, pharynx, and œsophagus, showing the effect of acute inflammation of the mucous membrane of the œsophagus, probably diphtheritic. The surface is discolored by the extravasation of blood. The mucous membrane is everywhere thickened, thrown into abnormally thick longitudinal folds, and flocculent from the presence of superimposed lymph."

The second is specimen No. 76,[2] presented by M. Guersant to the Museum of Dupuytren. It consists of a false membrane which occupied the greater part of the œsophagus of a little child, aged five years. It is 12 centimetres (about five inches) long, of considerable thickness, and presents some longitudinal striæ parallel to the axis of the canal. This same specimen, it seems, was exhibited by M. Millard[3] to the members of the Anatomical Society of Paris. He stated that it was expelled by efforts at vomiting, and incorrectly gave it a length of 17 centimetres (about seven inches). Ch. Talamon,[4] who reported a case of diphtheria of the œsophagus, which will be quoted in its proper place, does not attribute this immunity to any anatomical peculiarity of the part, but believes with M. Empis and M. Isambert that atmospheric contact is necessary for the production of diphtheritic deposit. M. Empis[5] says:—

"One fact which is rather remarkable in relation to the seat of diphtheria is this, namely, that all the parts which are completely removed from the contact of the air are preserved from the invasion of the disease. Thus, we very frequently see the membranous affection occupying the lower part of the throat, and the posterior wall of the pharynx, and spreading gradually to the larynx and deeper parts of the air-tubes; but I have never seen *true diphtheritis* propagating itself by continuity into the œsophagus and the parts of the digestive canal which are withdrawn from the influence of the air."

On the same grounds Empis bases a differential diagnosis between diphtheria and *muguet*, which latter has a great tendency to extend into the digestive tube. At the time he wrote, the term *diphthérite* was indiscriminately applied to all aphthous and pseudo-membranous formations, and for this reason he made use of, and italicised, the word *true*. Several weighty objections stand in the way of our accepting this theory.

We now know that diphtheritic deposit may be propagated to, or even occur primarily upon mucous surfaces which are removed from all atmospheric contact. Also we know that the mucous membrane of the œsophagus is little disposed to take on inflammatory action of any kind. Consequently, there is more reason to accept as the correct view, that which attributes the infrequent occurrence of both diphtheria and inflammation

[1] Descriptive Catalogue, J. and A. Churchill, 1884, p. 72.
[2] Catalogue, M. M. Houel, Paris, 1879, p. 219.
[3] Bull. Soc. Anat. de Paris, 1858, xxxiii. p. 90.
[4] Ibid., 1878, liii. p. 461.
[5] Memoirs on Diphtheria, Syd. Soc. Transl., 1859, p. 311.

of the œsophagus to the thickness of the epithelial layer of its mucous membrane, and to comparative paucity of its vascular supply.

Oppolzer[1] recognizes three varieties of œsophagitis: catarrhal, croupal, and pustular, either of which, he says, occurs as an idiopathic affection less frequently than as consecutive to some other disease. A fourth class may be made to comprise cases due to poisoning by caustic[2] substances in which more or less extensive gangrene of the mucous membrane is present. Croupal inflammation of the œsophageal mucous membrane, he goes on to state, is a much rarer affection than catarrhal, and exists in combination with croup of the pharynx or larynx, or, in certain cases, in connection with croupal pneumonia. "It is also encountered in typhus fever, in the third or fourth week of the disease; in the acute exanthemata, especially in smallpox; in cholera; in pyæmia; often, also, in dysentery; and, finally, in tuberculosis and carcinoma."

Various writers likewise mention the occurrence of pseudo-membranous œsophagitis after injuries, and in connection with different affections.

Croupal inflammation of the œsophagus is subdivided by some authors (Jacobi, Zenker and v. Ziemssen, and others) into œsophagitis fibrinosa and diphtheritica.

These two forms of inflammation are frequently found associated in the same case, fibrinous exudation being upon one part of the mucous surface and diphtheritic inflammation upon another. The fibrino-diphtheritic œsophagitis is more particularly the expression of secondary disease.

Through kindness of the gentlemen in charge of the Medical Library of the Surgeon-General's office, I have been enabled to review much of the literature bearing upon this subject, and to collect reports of cases of diphtheria of the œsophagus found therein. Cases other than these mentioned are doubtless recorded, but failure to find them is explained by the fact that they are scattered through articles on diphtheria without being titled in such manner as to associate the disease with its occurrence in the œsophagus.

Membranous casts of the œsophagus have been expelled as a result of other than diphtheritic disease. J. Solis Cohen[3] quotes from Birch-Hirsch-

[1] Von Oppolzer's Lectures on Diseases of the Œsophagus, condensed from the German by J. Solis Cohen, M.D., Phila. Med. Times, iii. p. 297, etc.

[2] Dr. Wrany reported the case of a man who vomited a quantity of blood, and with it there came into his mouth a mass which was found to be the mucous lining of the stomach and lower half of the œsophagus. Prof. Trietz, to whom the specimen was submitted, considered it the result of the action of sulphuric acid, and expressed the opinion that the man would die from stricture of the œsophagus. The stricture developed and the man died three months later. Dr. Wrany, although he accepted this explanation, very strangely reported the case under the title of "Diphtheria of the Œsophagus and Stomach."—Vrtljschr. f. d. prakt. Heilk. Prag. 1866, xc. p. 113.

[3] Pepper's American System of Medicine, vol. ii. p. 412.

feld[1] a case which would indicate that such a result might follow catarrhal œsophagitis when existing in a severe form. The epithelial coat of two-thirds of the entire length of the œsophagus was detached from this patient and expelled by emesis. Acute subepithelial suppuration was supposed to have detached the membranous tube. A unique case is recorded by Matthias Jacobaeus[2] of a man who had difficulty in swallowing for two years and a half. He could get no relief until he passed by stool a false membrane that came from the œsophagus.

Another case, interesting on account of its probably diphtheritic nature, is given by Bleuland.[3] He relates that he has in his possession a membrane more tenacious than the œsophagus, but similar in length and shape to it, which was expelled from the mouth of a female to whom he was called for the first time while in her death agony. Her friends thought a worm had been cast out. For two days he immersed the specimen in water, for the purpose of ridding it of filth, but he could not clean it sufficiently to recognize the nature of the membrane. He placed it in alcohol, "in which," he says, "it is still preserved; but whether it is the real lowest skin of the œsophagus, or a cohering tube of mucus, more tenacious than usual, such as I have seen ejected from the windpipe with the ramifications of the bronchi preserved, I would not dare to decide positively."

From the graphic description, one is almost permitted to believe that the specimen was a true diphtheritic cast of the œsophagus; a conclusion suggested by the writer's comparison of its appearance to membranous casts of the trachea and bronchi. The only clinical history obtained by him was that diarrhœa, with occasional bloody discharges, had existed for several days. At the time he was called to the patient her pulse was weak and irregular, hands and feet cold, face Hippocratic, breathing quick, and the humors were expelled with putrid smell.

Another case was recounted, in the year 1712, by M. Winslou,[4] which was more obscure in its nature:—

A man, aged 35 years, of florid complexion, had an apoplectic attack. He fell with convulsive movements, loss of consciousness, and from that became comatose. Finally, when he became conscious, he complained of a violent pain in his throat, and had much pain in swallowing. The next day he vomited a membranous tube of a finger's length, and during the remainder of the day brought up, always with blood, enough different portions of the tube to make the entire length of the œsophagus. It was really the internal membrane of the œsophagus which had become detached and narrowed. Swallowing liquids caused the man a burning pain. M. Winslou examined the patient after he had recovered from all his symptoms except a hoarseness. Nothing unusual was perceived except that the palate and neighboring parts were slightly inflamed.

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[1] Lehrbuch, der pathologische Anatomie, Ziemssen, 1877, p. 818.

[2] *Acta Medica*. Thomas Bartholini, 1671 and 1672, p. 212.

[3] Observationes Anatomico-Medicæ de Sanâ et Morbosâ œsophagi structurâ. Lugd. Batav. in 4°. 1784, pp. 19–20.

[4] Collection de Pièces Académiques, tome iii., partie française. Paris, 1769, p. 550.

The reports of a number of the cases found add but little information to the clinico-pathological history of this disease. In some, the diagnosis is more than doubtful, and in many the symptoms are but briefly described.

The observations of Andral and Cruveilhier have been frequently referred to by writers on the subject. Andral[1] merely states: "M. Gari, resident physician at the Hôpital des Enfans Trouvés, lately showed me the œsophagus of a new-born infant, the internal surface of which was lined for about a third of its extent with a layer of whitish, solid matter, which could not be detached without difficulty from the subjacent membrane, and seemed to me to be situated beneath the epithelium. There was no trace of false membrane in the rest of the alimentary canal."

Cruveilhier[2] is even less satisfactory. He says: "I have found, among the observations of M. Dupuytren, a very remarkable example of an inflammation of the œsophagus marked by the formation of a thick false membrane, which covered this musculo-membranous canal in all its length."

Grimand's[3] case is open to the same objection. He recently discovered in the œsophagus a membranous formation, whitish, adherent, half a line thick, and prolonged as far as the stomach, a peculiarity which appeared very strange to Drs. Grimoux and Moncla, present at the autopsy of a child who had died of intense croup which began by angino-tonsillaris.

Steffen[4] has reported a series of *post-mortem* examinations in which he found the œsophageal mucous membrane affected, to a greater or less extent, by pseudo-membranous deposit. In two cases the diphtheritic disease was idiopathic, and in thirteen it was secondary to pneumonia, miliary tuberculosis, scarlatina, peritonitis with abscess of the spleen, and intestinal catarrh.

The following are reports of cases of diphtheria of the œsophagus which have been collected from various sources. They are considered under two classes: *idiopathic* and *secondary*.

Cases of Idiopathic Attacks of Diphtheria of the Œsophagus.

Case 1.—On Monday, March 23d, 1885, I was called to see Miss Fannie H. S., American, eighteen years of age. She had remained in bed since the Saturday preceding with the hope that rest would relieve her of a profuse menstrual flow which had lasted one week. She had never before had any trouble with her catamenia.

I found her sitting up in bed spitting blood freely into her handkerchief, and it was on account of this hemorrhage, which had lasted twenty-four hours, that medical aid was sought.

[1] Treatise on Pathological Anatomy, English translation, New York, 1832, vol. ii. p. 172.

[2] Essai sur l'Anatomie pathologique en Général, Paris, 1816, t. i. p. 146.

[3] Nature et Anatomie Pathologique du Croup, ou Angine trachéale des Enfans. Journal du Dictionnaire des Sciences Médicales, Paris, 1821–1822, vols. xi. and xii. p. 234.

[4] Jahrb. f. Kinderheilk., Leipzig, 1868–9, Bd. ii. pp. 142–168.

On examination the right tonsil was found to be the source of the bleeding, and upon this and the opposite tonsil were two patches of diphtheritic membrane. No complaint had been made of sore throat. Her pulse was 120 and feeble; temperature 103° F. I ordered a potassium chlorate and tincture of chloride of iron mixture; milk diet, and directed the throat to be frequently atomized with carbolic acid and lime-water, 1 to 64.

24th. The bleeding had continued without change. I applied to the right tonsil Monsel's solution diluted one third with glycerine and containing carbolic acid in the proportion of 1 to 32. Same treatment continued and a tablespoonful of whiskey ordered every four hours.

25th. The bleeding had been less. A large piece of false membrane was removed from the right tonsil and the subsulphate of iron solution was applied to the surface. The exudation extended over the right pillar of the fauces and fringed the uvula. The potassium chlorate and tincture of iron mixture was discontinued on account of the nausea it occasioned, and I ordered instead digitalis and bichloride of mercury.

26th and *27th.* Thick and blackened pieces of pseudo-membrane, when removed from the right tonsil and corresponding side of the pharynx, would reappear, fully formed within less than twenty-four hours. The patient complained of choking sensations, and anxiously looked for the relief which forcible removal of these patches brought. The pulse

a. A mass of diphtheritic membrane and clotted blood from the top of the pharynx, incised to show its internal structure.

b. Patch of membrane from the right tonsil, which is stained dark by the action of iron.

c, c. Points corresponding to the beginning of the œsophagus.

d. Point of union. The prolongation of membrane from the pharyngeal mass *a*, completely enveloping that from the tonsil, *b*.

e. From the constricted portion of the œsophagus near the cardiac end of the stomach.

f. A piece which was evidently detached from the gastric mucous membrane.

ranged from 120 to 140, and the temperature from 104° to 105°. She was becoming very anæmic. Hemorrhage recurred from the tonsil at irregular intervals, and attacks of epistaxis became a troublesome feature. Her breath was exceedingly offensive, and imparted a disagreeable odor to the air of the room. The menstrual flow changed at times to a serosanguineous discharge and contained pieces of diphtheritic membrane. Whiskey and milk were given freely.

28*th*. Her restlessness reached a climax at 6 A. M., when, by a combined retching and hawking effort, she dislodged and spat up a long cast of membrane. She was immediately relieved and went to sleep. Several attacks of epistaxis occurred during the day, and the anæmia was progressively increasing. The bichloride of mercury was stopped; digitalis, milk, and whiskey continued.

29*th*. I was summoned to see the patient at one o'clock in the morning on account of a return of the choking and of hemorrhage. When I reached the room her mother said, "Doctor, you are too late; she has just brought up another long piece of membrane and is relieved."

The membranous cast was found in the chamber, and is faithfully represented by the cut on the preceding page.

The length of the specimen (from *a* to *e*) is fifteen inches (37½ centimetres).

From *c c* to *e*, the length of the œsophagus, a little less than nine inches (22 centimetres).

During the day of the 29th the patient gradually lost strength. I saw her at 3 P. M., in answer to an urgent message. Profuse epistaxis had weakened her still more, and the pale face of the sufferer was rendered more blanched in appearance by contrast with the blood-stained cloths and pillow-slip. Her temperature remained above 104 degrees all day. A patch of diphtheritic exudation formed upon the inner surface of the lower lip. Six or eight bloody stools were passed.

She died of exhaustion about midnight, having retained consciousness until one hour before the end.

CASE 2.—By Horteloup.[1] P. L., aged 19 years, male, slightly developed, entered l'Hôtel-Dieu July 24, 1825. He had been seized four days before with pain in his throat which prevented him from supping. He went to bed, and next day, after a quiet night, resumed work. A little difficulty in deglutition, added to a frequent cough, was all that he suffered from. Fever, swelling of the tonsils, and severe headache came on during the night, and forced him to keep his bed the next day. He remained thus without attention for two days. Symptoms soon increased. A convulsive cough and impossibility to swallow induced his friends to send him to the Hôtel-Dieu. Skin warm and dry; pulse frequent and feeble; cough convulsive and dry. Efforts to speak increased the suffocation. Soft palate very red; tonsils swelled and of a grayish color; no pain at epigastrium. Leeches applied to the top of the sternum permitted the patient to swallow some mouthfuls of liquid, something he had not been able to do since morning. Next day he coughed up a cast of the trachea and bronchi. Improved somewhat: respiration became freer, and deglutition easier. Unfavorable symptoms returned, and he died of suffocation on the next day. *Autopsy*.—False membrane was found to have extended from the nasal fossa to the pharynx, over the tonsils, *and invaded the upper half of the œsophagus*. It was also prolonged into the trachea and bronchi. Mucous membrane red.

CASE 3.—By Abercrombie.[2] "Gentleman, aged 26, came to town in June, 1826, to consult me about complaints in his head. On his journey he thought

[1] Obser. de Croup chez l'Adulte. Thèse, Paris, 1828, in 4to., No. 53. Case II.

[2] Pathological and Practical Researches on Diseases of the Stomach, the Intestinal Canal, etc. John Abercrombie, M.D., 3d Am. from 2d London edit. Phila., Carey, Lea, & Blanchard, 1838, pp. 87–88.

he caught cold in crossing the Frith of Forth, and, when I saw him, he complained of his throat, and there was a granular swelling on the right side of his neck. His voice was hoarse, with a peculiar husky sound.

"The fauces were of a bright red color, without much swelling, but were covered in several places with aphthous crusts. He was at this time not confined, and there was no fever; but, after a few days, he became feverish, and other symptoms continued as before. He was now confined to bed and actively treated, and after eight or nine days he was much better, so as to be able to be out of bed; but there was still some rawness of the throat, with small aphthous crusts, and a husky sound of the voice. After a few days there was a recurrence of the fevers, which now assumed a typhoid type, with considerable appearance of exhaustion. He had some dyspnœa, with considerable difficulty of swallowing.

"The attempts to swallow excited sometimes cough, and sometimes vomiting; and by both he brought up considerable quantities of a soft membranous substance. He became more and more exhausted, without any remarkable change in the symptoms, and died at the end of about three weeks from the first appearance of the disease. For twelve hours or more before death he swallowed pretty freely.

"*Inspection.*—The whole of the pharynx was covered by a loose soft adventitious membrane, which also extended over the epiglottis, and portions of it were found lying in small irregular masses within the larynx, at the upper part. *A similar membrane was traced through the whole extent of the inner surface of the œsophagus, quite to the cardia.* Near the cardia it lay slightly attached, forming a soft continuous mass about a third of an inch in diameter, and with the œsophagus closely contracted around it. The other parts were healthy."

The author carefully avoids committing himself by giving an expression of opinion as to the nature of the sickness from which his patient died, a caution we can readily appreciate when we consider the fact that the case came under his care in the year 1826.

Bretonneau was then just elucidating those views of diphtheria which subsequently proved the basis of a more correct pathology. Abercrombie, when writing the first edition of his work,[1] said the disease was not common in Scotland, but that it had been very fatal in Edinburgh in 1826. "It is," he says, "evidently an affection quite distinct from the idiopathic inflammation of the membrane of the larynx, to which we commonly apply the name of Croup."

The clinical picture he draws of the case and the result of the post-mortem examination clearly show that he had an attack of idiopathic diphtheria, to treat which was of unusual interest in consequence of the invasion of the mucous membrane of the œsophagus.

CASE 4.—By M. Millard.[2] A delicate child three years of age was treated for a small cold abscess below the jaw of the right side. Five or six days afterwards she became affected with general diphtheria. The false membrane developed upon the skin, at the opening of the abscess; in the mouth; upon the tongue, pharynx, œsophagus, trachea, bronchia, and vulva. She died from croup on the fifth day. At the autopsy the œsophageal mucous membrane was found to be implicated *in its lower half only*. At about ten centimetres (four inches) below the cricoid cartilage patches of pseudo-membrane were apparent. They presented exactly the same appearance as those in the pharynx, were disposed in vertical lines, and increased progressively in extent from above downwards. Quite at the lower extremity these coalesced to form a complete tube; at the level of the cardia they occupied only the anterior half of the tube, and stopped

[1] Ibid., Edinburgh, Waugh & Innes, 1828.

[2] Bull. Soc. Anat. de Par., 1858, xxxiii. pp. 216-219.

abruptly two millimetres below the line marking the limits of the epithelium of the stomach and œsophagus. The stomach was small, and neither it nor the intestines revealed any traces of diphtheria.

CASE 5.—By Bretonneau.[1] A very weak and small child of fifteen died of croup. White, thick, coriaceous pellicles lined the walls of the pharynx and of the trachea, and extended over the whole of the pituitary membrane. The false membrane had seldom been found so tenacious and elastic. *It passed deep into the œsophagus*, but in place of forming there a complete tube, it was spread out by distinct bands which were terminated in points at different distances; the longest reached the cardiac end of the stomach. A rather vivid redness descended below the false membrane and circumscribed it; so that between each red dotted streak there remained a perfectly healthy interval.

CASE 6.—By Ch. Talamon.[2] L. Marie, aged two and a half years, entered Saint Eugénie Oct. 10, 1878; eighth day of her sickness. The disease began with malaise, slight fever, and some pain in swallowing. After four or five days a doctor was consulted, who recognized membranous sore throat and ordered an emetic. Two days later the mother observed a slight yellow discoloration of the conjunctivæ, and the urine became very dark-colored. Since yesterday morning the cough has become harsh and the voice extinguished.

Later she had difficulty of breathing, with paroxysms of suffocation; an icterode color of the face and conjunctivæ, but not of the body. Urine albuminous.

Tracheotomy was performed, but the child died fourteen hours afterwards.

Autopsy two hours after death. Tonsils and pharynx covered with pseudo-membrane which extended into the larynx and œsophagus. *The membrane was rather thin, and adhered closely to the mucous membrane of the upper fourth of the œsophagus; it became thicker, but was more readily detached throughout the rest of the canal.* Whilst in the upper part it could be raised up only in shreds just as in the pharynx, it appeared lower down like false membrane from the bronchial tube and was attached by long ribbon-like bands; in the lower fifth it contracted into a narrow string which was prolonged to, but not through the cordia.

Gastric mucous membrane was of normal appearance.

CASE 7.—By Jacobi.[3] Boy, four years of age, was under treatment for stricture of the œsophagus caused by having swallowed lye one year before. He was improving, and could swallow semi-solid food when an attack of diphtheria developed. The air-passages were involved, he became unable to swallow, and died.

At the autopsy, diphtheritic exudation was found in the air-tubes. The œsophagus was normal for the first five inches (about 12 centimetres) of its extent. Below this point there existed a tight stricture from one to one and a half inches (two and a half to four centimetres) long. *This stricture was the seat of diphtheritic deposit and infiltration which had caused it to contract very tightly.* The use of bougies had evidently caused the disease to manifest itself at the seat of stricture.

The origin of my case, like so many sporadic ones, is a riddle for the Sphynx. The young lady was a member of a large household, no others contracted the disease, and, as far as I am aware, no cases of diphtheria had existed in the neighborhood within a reasonable time. An inspection of the sanitary condition of the premises yielded the usual negative result.

The bloody stools which were passed during the last of her sickness doubtless owed their origin to the invasion by diphtheritic exudation of the mucous lining of some part of the intestinal canal. They could scarcely be attributed to the administration of the bichloride of mercury.

[1] Memoirs on Diphtheria, Syd. Soc. Transl., 1859, p. 18.

[2] Bull. Soc. Anat. de Paris, liii. 1878, p. 460.

[3] Treatise on Diphtheria, New York, 1880, p. 83.

The stools were unaccompanied by griping, and did not appear until after the drug had been suspended. It was given in doses of 5 milligrams every four hours, increased after the first twenty-four hours to 7 milligrams at a dose. No disturbance of the stomach was caused by its use. The entire absence of those low, typhoid symptoms which usually develop in grave cases of diphtheria, and which are dependent upon a septic poison, would tend to argue in favor of the antagonistic influence of bichloride of mercury against such secondary blood-poisoning. The expression of the patient was bright, she was intelligent throughout her sickness, and answered questions promptly; in fact, her pale face alone gave evidence, by sight, of the terrible malady under which she suffered. The destruction of the blood elements manifested by the extreme and progressively increasing anæmia continued until life seemed no longer compatible with its altered state.

On one occasion, when 72 centigrams of quinia were given for its antipyretic effect, the patient had a severe attack of epistaxis follow. Its further administration was withheld because of the fear that by increasing cerebral congestion it would render more liable the recurrence of such attacks.

The digitalis was given in accordance with my habit, of some years' standing, of administering it in all, or nearly all, cases of diphtheria, not only during the attack but until convalescence is well established. If digitalis were used more generally in this disease, I believe there would be fewer cases to report of sudden death from heart failure. Its use is imperatively called for when there exists either an intermittent or a rapid and feeble pulse. Even the abnormally slow pulse which so often accompanies or follows the disease is, according to my experience, an indication calling for the exhibition of the drug.

CASES OF SECONDARY ATTACKS OF DIPHTHERIA OF THE ŒSOPHAGUS.

Under the head of secondary attacks are considered not only cases that develop during the existence of another disease, but also those which occur after the primary disease has run its course. These latter occur during, or soon after, the convalescence of the primary disease, and consequently partake more of the nature of idiopathic attacks.

CASE 8.—By Hennig.[1] The four children of M. Hennig were infected with scarlet fever by a physician who had called to pay a friendly visit. The disease pursued a regular course in the children, but not so with the servant, who was attacked at nearly the same time as they. No trace of an eruption presented itself in her, but she offered an array of very grave symptoms, which indicated that the affection, so to speak, had concentrated itself upon the œsophagus. On the eighth day of sickness the patient felt a constant tickling in the œsophagus. This tickling caused a violent and constant cough, which persisted until the twelfth day. At this time, the menses having appeared, she rapidly improved, and expectorated by cough a large quantity of membranous *débris*, like that which we

[1] Bibliothèque Médicale, Paris, 1817, t. lviii., p. 384.

witness upon the surface when in this disease the desquamation of the skin takes place.

CASE 9.—By M. Louis.[1] A woman, aged 32 years, was admitted into La Charité in May, 1823, with all the symptoms of advanced phthisis. Thirst great, anorexia complete, deglutition easy, without pain in the throat, epigastrium very sensitive to slight pressure, speech short, cough moderately frequent and dry. A month or so after admission she complained of a pain in her throat, with some difficulty in swallowing. The pain persisted for four days, when she became much worse; the pharynx was very red, and pain extended along the trachea as far as the sternum. This was accompanied by a sensation of tension and swelling in this part; no alteration of voice; fever high; deglutition difficult. The patient expectorated some membranous pieces during the night. The next day her depression was such that she would not submit to an inspection of her throat. Swelling of the neck increased. M. Chomel examined the patient and discovered a false membrane covering the pharynx, tonsils, and palate. The patient died that night.

Autopsy.—Palate, tonsils, and pharynx were covered with a false membrane half a line in thickness, and very adherent to the mucous membrane. *The false membrane extended into the œsophagus four inches* (10 centimetres) *below the cricoid cartilage*, diminishing successively in thickness and consistency. It also passed into the larynx, trachea, and bronchi. The mucous membrane of the stomach at the anterior and superior part was red and covered with a soft false membrane.

CASE 10.—By Bretonneau.[2] Three days after the death of one child, a sister, aged eight months, became sick. There were fever, cough, swelling of the parotid regions, and difficulty of respiration. The back of the mouth was covered with grayish incrustation. A sponge moistened with concentrated hydrochloric acid was applied to the isthmus of the throat, and the same application repeated night and morning for three days. Dyspnœa increased, pulse became small and frequent, and death occurred on the sixth day. It was suspected that the application of hydrochloric acid had been too frequent and too strong. *Autopsy.* The villous coat of the tongue appeared rather deeply altered by the action of the local remedy. The uniform white tint of all the anterior part of the velum palati and the tonsils was manifestly due to cauterization. The membraniform exudation, which was extremely thick, but not very adherent, extended from the pharynx and nasal fossæ *downwards to the cardiac orifice of the stomach.* Under this exudation the mucous membrane of the œsophagus appeared in a healthy state. It is not very probable that its formation was determined by the application of the acid, for every cauterization occasioned efforts of vomiting. The false membrane did not invade the air-tubes. The mucous membrane of the trachea was normal. Solidity of the posterior part of the inferior lobe of the left lung appeared to be due both to cadaveric exudation and to an inflammatory hepatization.

CASE 11.—By M. Millard.[3] M. G., aged three years, was brought to his notice on February 20th, suffering with croup in its last stage. She had had scarlatinous anasarca for three weeks, and only complained of trouble in the throat since the day before. When he saw her, the anasarca was well pronounced, she had dyspnœa, and hoarseness of voice. Deglutition still very easy. Tracheotomy was performed in spite of the desperate nature of the case. She died asphyxiated twenty-four hours after the operation.

Autopsy.—Membranous deposit occupied the internal surfaces of both tonsils, the sides of the base of the tongue, and was continued over the two aspects of the epiglottis into the larynx and trachea. It also covered the lateral walls of the pharynx, *and was prolonged into the upper part of the œsophagus for a distance of about 5 centimetres* (2 inches). The left half of the anterior face of the œsophageal canal was particularly affected; it was covered by a vertical band of white, false membrane, directly continuous with that of the pharynx.

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[1] Archives Générales de Médecine, Paris, 1824, t. iv. pp. 23-26.
[2] Memoirs on Diphtheria, Syd. Soc. Transl., 1859, p. 76.
[3] Bull. Soc. Anat. de Paris, 1858, xxxiii. p. 87.

The membrane was more adherent in the œsophagus, especially on a level with its upper extremity. The mucous membrane throughout the rest of the œsophagus did not present any alteration except being very pale.

CASE 12.—By M. Vidal.[1] He had seen in 1854, in the service of M. Blache, a false membranous tube occupying the entire length of the œsophagus. It was in a case of diphtheria, secondary to typhoid fever. The child was ten years old, and had been sick with typhoid fever two weeks before the diphtheritic complication arose. The uvula, tonsils, and posterior wall of the pharynx were clothed with grayish false membrane. She had dryness of the mouth and great thirst. It was not observed that she had any dysphagia, in fact, the little patient was so far exhausted that she did not seem conscious when she swallowed. She died the next morning.

Autopsy.—The usual characteristic lesions of typhoid fever. The uvula, tonsils, and posterior wall of the pharynx were covered with a grayish false membrane, *which was continued, without any line of demarcation, throughout the œsophagus, forming an internal lining even to the level of the cardia.*

It was exactly moulded to the œsophagus, and about one millimetre in thickness, except towards the cardia, where it became considerably thinner.

CASE 13.—By Ogle. He reported to the Pathological Society of London[2] "a case of a tubular cast of the œsophagus, formed of epithelium and exudation matter," which was brought up by a man suffering with cholera. The patient died, but no autopsy was made. The microscope showed the specimen to "consist mainly of a yellowish, amorphous, and granular substance of an albuminofibrinous character; abundance of oily particles and epithelium mixed with it."

CASE 14.—By Klob.[3] A woman, 83 years of age, entered the Rudolph Hospital, Vienna, June 4, 1865, with an ovarian cyst, and died of marasmus. An autopsy was made, and the chief point of interest consisted in the appearance of the œsophagus. The mucous membrane of the fauces and pharynx was normal, *but from the first tracheal ring it appeared as if the mucous membrane and submucous tissue of the enlarged œsophagus, down to the cardia, were changed into a dirty-looking, black-brown, œdematous membrane, 5 to 7 millimetres thick.* This was due, in Klob's opinion, to "a highly intense diphtheritis of the œsophagus," an affection which he says he is unable to find mentioned in literature.

The foregoing cases constitute the more important of the secondary attacks of the affection that I find reported. It is ascertained that diphtheritic inflammation of the œsophagus complicates scarlet fever, pneumonia, and tuberculosis more frequently than other diseases. Ferrand[4] has reported two cases that developed in children soon after recovery from scarlet fever, and in both the superior part of the œsophagus was affected.

Of these 14 cases, 7 were idiopathic and 7 secondary. The diphtheria involved the œsophagus by direct extension of diseased action from the pharynx or larynx in all but 5 cases, 2 of the former class, and 5 of the latter. In Case 3, although false membrane was found lining the mucous surfaces of the mouth, throat, and air-passages, "the œsophageal mucous membrane was implicated in its lower half only." It is possible, of course, that the exudation may have been originally continuous with that of the pharynx and larynx, and that subsequently the upper half became detached and expelled. The deposit, Millard says, first occurred in patches 10 centimetres below the cricoid cartilage, and increased in

[1] Bull. Soc. Anat. de Paris, 1858, xxxiii. p. 90.

[2] Transactions, 1855, vi. p. 182.

[3] Wochenbl. d. Zeitschr. d. k. k. Ges. d. Aerzte in Wien, 1865, 21 Jahrg. pp. 373–378.

[4] De l'Angine Membraneuse. Thèse, Paris, 1827, p. 14.

amount from above downwards until, at the lower extremity, it embraced the entire calibre of the œsophagus. As the stomach and intestines were free from any such deposit, it would appear that the diphtheritic process commenced at the inferior extremity of the œsophageal canal and extended upwards. In Case 6, false membrane existed in the air-tubes, and its presence in the lower part of the œsophagus was evidently due to the traumatic influence of the bougies that had been passed to dilate the stricture at that point. In Case 8, the patient recovered after coughing up a quantity of *débris* of false membrane.

It is not absolutely certain that this false membrane came from the œsophagus. Further doubt may be expressed concerning the true nature of the attack from which the patient suffered. As scarlet fever existed at the time in the same household, M. Hennig considered it a case of that disease in which the effect of the poison was concentrated in the œsophagus. Ogle did not say anything about the condition of the pharynx in his patient (Case 13), consequently it is fair to assume that the membrane did not invade this part. Klob (Case 14) distinctly states that "the mucous membrane of the fauces and pharynx was normal," and that the disease began in the first tracheal ring.

The diphtheritic membrane involved the mucous surface of the entire length of the œsophagus, either as a tubular lining or in bands prolonged to the cardia, 7 times. (Cases 1, 2, 4, 5, 10, 12, 14.) In several of the cases it became narrowed at the inferior extremity into a string-like prolongation which reached to the cardiac end of the stomach.

But 2 of the 14 cases expelled a cast of the œsophagus (Cases 1 and 13). The presence of false membrane was demonstrated in the others only by *post-mortem* examination. In the case which I report there were, in fact, two such casts brought up, but the first specimen was destroyed before I could obtain it, in obedience to directions given the family that all expectorated matters were to be instantly burned. The length of the specimen obtained by Ogle is not given. It was expelled by a man who was suffering from fever consecutive to cholera.

Frequency.—While admitting that diphtheria of the œsophagus is rare, may it not occur more frequently than we have been led to believe is the case? Two reasons combine to mask its occurrence:—

1. Comparatively few autopsies are made upon patients who die of diphtheria, except, probably, when such deaths occur in public institutions. In private practice the safety of the living demands the speedy removal and interment of the dead.

2. Because, as far as we can at present judge, the symptoms of the extension of the disease to this locality are by no means distinctive.

The following table gives the number of cases in which the œsophagus was found involved in a series of autopsies performed by different observers upon patients who had died of diphtheria:—

By whom reported.	No. of autopsies.	No. of times Œsophagus involved.	Extent of invasion.	Reference.
Bretonneau,	55	2	Entire length,	Memoirs on Diphtheria, Syd. Soc. Trans., 1859.
E. Wagner,	80	2	Upper part,	Ziemssen's Cyclop., vol. viii. p. 145.
West,	9	2	.....	Diseases of Infancy and Childhood, 6th edit. London, 1874, p. 321.
.....	10	2 {	*a.* Some distance,	British Med. Journal, 1859, pp.
Ch. Talamon,	108	1 {	*b.* Upper part. Entire length.	305, 326, 348, 380, and 480. Bull. Soc. Anat. de Paris, 1879, liv. p. 180.
Total,	262	9		

The proportion of cases in which the œsophagus was found implicated to the number of autopsies performed by each of these observers varies greatly. The average is about 3½ per cent. The entire length of the tube was affected three times, or a fraction above 1 per cent. Zenker and Ziemssen[1] have met with it twice in a much smaller number of autopsies than that quoted from Wagner (80). Squire[2] mentions its occurrence in two instances out of a list of 74 cases of general diphtheria.

Symptomatology.—Diphtheritic inflammation is so seldom limited to the mucous membrane of the œsophagus that unusual difficulties attend the study of its symptoms. The coincident occurrence of diphtheria of the tonsils, pharynx, or air-passages, in a number of cases, renders it impossible to separate the symptoms indicative of disease of the one part from those of the other.

Greenhow[3] believes that the extension of diphtheria to the œsophagus can be recognized by certain symptoms. These "are extreme difficulty of deglutition, amounting sometimes to total inability to swallow even fluids, followed in some instances by vomiting, as if the disease had extended to the stomach." In corroboration he quotes the observations of Dr. Gull, and also says:—

"Mr. Stiles, of Pinchbeck, informs me that he has met with cases in which there was difficulty in swallowing without any evident throat affection. He attributed this to the existence of diphtheritic exudation in the lower part of the pharynx, or the œsophagus below the reach of vision.

"In one instance, a patient thought from a sensation of choking that some substance was sticking in his throat, and on passing a probang, shreds of false membrane were brought up on the sponge. Diphtheria existed in the patient's house at the time.

"Œsophageal diphtheria is attended by extreme difficulty of deglutition, often followed in a day or two by pain, either during the passage of food through the œsophagus or after it has arrived in the stomach."

[1] Ziemssen, Cyclop., German edition, 1878, p. 145.

[2] Manual of Diseases of the Throat and Nose, Morell Mackenzie, M.D., New York, 1884, p. 48.

[3] On Diphtheria, E. H. Greenhow, New York, 1861, p. 112.

Dr. Gull,[1] whom Greenhow quotes, thus expresses himself:—

"In several cases the condition of deglutition (amounting often to total inability to swallow even fluids) indicated that the mucous membrane of the œsophagus was the chief seat of the malady. In the case of a gentleman I saw at Counter Hill, Greenwich, there was scarcely any faucial affection; the disease seemed to be seated principally at the commencement of the œsophagus. The fauces were injected, but there was no exudation; the finger, passed into the lower part of the pharynx, discovered a thickened and obstructed state of the part. Any attempt to swallow even a small quantity of fluid was followed by ejection of it through the nares. The case after a time recovered.

"In another case, under the care of Mr. Burton, of Greenwich, the fauces were not noticeably affected. The principal trouble was difficulty of deglutition, followed (as if by extension of the disease to the stomach) by uncontrollable vomiting and rapidly fatal exhaustion. The abdomen remained soft and rather collapsed.

"From these and other cases it seemed that the diphtheritic process might primarily locate itself upon the lower part of the pharynx or in the œsophagus, and thence extend to the stomach. Unfortunately, in the fatal case alluded to, no post-mortem examination could be obtained."

It is indeed unfortunate, for without an autopsy no grounds existed upon which to base such a diagnosis. "The fauces were not noticeably affected;" no mention is made of any false membrane being visible, and yet, strange to say, the diagnosis of diphtheria of the œsophagus was made because there was difficulty of deglutition, followed by vomiting and death.

Again he says:—[2]

In three instances which I have named, the affection of the fauces, if ever present, had been too slight to arrest attention; in these the chief symptoms were referable to the œsophagus. Two died, one recovered. No post-mortem examination could be obtained."

These three cases were considered diphtheritic, because there was inability to swallow in one case, nearly so in the second, and great difficulty, followed by vomiting, in the third. In one of the cases, it is true, he obtained additional evidence by passing his finger into the lower part of the pharynx and discovering an obstructed state of the part. Setting aside the difficulty of such manipulations, it is probable that Dr. Gull would meet the same obstructed state in the exploration of a healthy throat.

Certainly Drs. Greenhow and Gull possess the faculty of being able to recognize diphtheria of the œsophagus with greater facility than any others who have written upon the subject.

If difficulty of deglutition should ever prove to be such a characteristic symptom of the disease as they represent it, all credit will be due them for having placed it in such a prominent position. Equally open to error is the opinion maintained by these gentlemen that vomiting is presumptive evidence that the disease has extended to the stomach. The gastric mucous membrane has been found covered with false membrane when no symptoms existed during life to direct attention to the part.[3]

[1] Report of the Medical Officer of the Privy Council, London, 1859, pp. 300–301.
[2] Ibid., p. 305. [3] Talamon, Bull. Soc. Anat. de Paris, 1879, liv. p. 186.

In order to study the clinical history of the affection, in so far as it is represented by the preceding cases, I have arranged a tabulated statement of the more important symptoms which were mentioned to have been present in each.

Failure to report the cases more fully has prevented the preparation of a more complete table.

Cases.	Pain in Throat.	Dysphagia.	Dyspnœa.	Cough.	Vomiting.	Expectoration of membrane.	Parts involved.
1	None.	No trouble.	Choking sensations.	None.	None.	Two casts of the entire length of the œsophagus.	Posterior nares, pharynx, tonsils, and œsophagus.
2	Pain.	Impossible to swallow.	Increased by efforts to speak.	Frequent.	.....	Cast of trachea and bronchi.	Nasal fossæ, pharynx, tonsils, upper half of œsophagus, trachea, and bronchi
3	.....	Considerable difficulty; 12 hrs. before death no trouble.	Some.	Excited by attempts to swallow.	Excited by attempts to swallow.	Pieces by cough and vomit.	Pharynx, larynx, and whole of œsophagus.
4	.....	.....	Died of croup on 5th day.	.....	.....	.....	Mouth, tongue, pharynx, trachea, bronchi, vulva, and lower half of œsophagus.
5	.....	.....	Croup.	.....	.....	.....	Pharynx, trachea, and deep in œsophagus.
6	.....	Some pain in swallowing.	Difficult breathing, paroxysms of suffocation.	Harsh, croupy.	.....	.....	Tonsils, pharynx, larynx, whole of œsophagus.
7	.....	Impossible to swallow.	.....	.....	.....	.....	Air-passages, and 1¼ inch of lower part of œsophagus.
8	.....	.....	.....	Tickling and convulsive.	.....	Membranous débris by cough.	
9	Pain extended along trachea as far as sternum, accompanied by sensation of tension and swelling	Difficulty in swallowing.	.....	Dry; phthisis.	.....	Some pieces coughed out during one night.	Palate, tonsils, pharynx, upper ⅓ of œsophagus, larynx, trachea, and bronchi.
10	.....	.....	Some.	Cough; pneumonia.	.....	.....	Nasal fossæ, pharynx, whole of œsophagus.
11	.....	Deglutition easy.	.....	.....	.....	.....	Tonsils, tongue, larynx, trachea, pharynx, and upper part of œsophagus.
12	.....	None.	.....	.....	.....	.....	Uvula, tonsils, pharynx, whole of œsophagus.

Dysphagia existed in 5 cases. In 2 of the number it amounted to total inability to swallow. In 3 cases deglutition gave no pain. Dyspnœa was

present in 7 cases; cough in 6; vomiting in 1. False membrane was brought up in 5 cases, and in one, at least, it came from the air-passages.

In every case but one, accompanied by dysphagia, the pharynx was invaded by the diphtheritic process, and in four of the five cases the tonsils were also implicated. The exceptional case is number 6, and, in that, the inability to swallow was due to contraction of a pre-existing stricture of the œsophagus. The absence, therefore, of painful deglutition would not exclude diphtheria of the œsophagus, neither would its presence indicate it. Professor Klob, in commenting upon his case (14), says,[1] "During her life no symptoms had created suspicion of any disease of the œsophagus; nay, even the patient had, in the very last days, swallowed fluids without perceptible difficulties." In the case that came under my observation (1), the patient swallowed with facility. Milk was taken in large quantities, and apparently assimilated, and during the latter half of her sickness she was given nearly 500 grams of whiskey each twenty-four hours. Mondière[2] speaks of the impossibility of determining when diphtheritic inflammation has invaded the œsophagus. Its symptoms, if we possess any, are generally masked by those which occur as a result of the implication of the pharynx and respiratory passages. *A priori*, he says, one would be likely to think that pain in swallowing would be most prominent, and vomiting frequent, but such is not the case. Indeed, in a case observed by M. Bretonneau, the frequency of vomiting had given rise to the suspicion that the diphtheritic inflammation had propagated itself from the pharynx to the œsophagus, and possibly the stomach; but these conjectures were proven untrue by the autopsy. Oppolzer,[3] in speaking of dysphagia as an indication of œsophageal disease, states that "too much weight must not be accorded to this symptom, inasmuch as its cause may be altogether outside of the œsophagus on the one hand, and, on the other, because extensive disease of the œsophagus may exist without giving rise to the slightest impediment to swallowing."

Dyspnœa and cough are explained by the extension of the diphtheritic membrane to the air-passages in most of the cases accompanied by these symptoms. In one they were due to pneumonia. In my case no disease of the respiratory passages existed. This *guttural dyspnœa*, according to Bretonneau,[4] is readily differentiated from that due to laryngeal trouble, even when the two coexist in the same patient.

In one of the cases dyspnœa was increased by efforts to speak, and in another cough and vomiting were excited by attempts to swallow. Oppolzer[5] states that "a spasm of the œsophagus will sometimes ensue on attempting deglutition, which, in many instances, will involve the respiratory organs and produce a sense of impending suffocation." The choking

[1] Ibid., p. 378.
[2] Archives Générales de Médecine, 1883, 2e série, t. iii., p. 40.
[3] Ibid., p. 277. [4] Ibid., foot-note, p. 112. [5] Ibid., p. 278.

sensations, or attacks of short breathing, experienced by my patient were evidently due to swelling of the parts from infiltration, and to mechanical obstruction offered by the presence of false membrane in the pharynx and œsophagus; that in the latter situation probably caused a diminution of the calibre of the trachea by pressing forwards the intermuscular septum forming its posterior wall. Relief was afforded by forcible removal of pieces from the right tonsil and corresponding side of the pharynx. As the exudation returned, the choking reappeared, but it never amounted to that intense dyspnœa indicative of implication of the air-passages. The difficulty of breathing and restlessness became greatest just before the first cast of membrane was expelled. She was immediately relieved and fell asleep, but in less than twenty-four hours the same state of affairs existed and relief was obtained in the same manner.

Diagnosis.—The diagnosis of diphtheria of the œsophagus is extremely difficult. In most cases it is absolutely impossible to recognize the disease. This difficulty is met with, not only when the œsophageal mucous membrane is primarily the seat of diphtheritic inflammation, but also when it is implicated by extension of the false membrane from the pharynx or larynx. In the vast majority of the reported cases[1] its presence was not suspected until revealed by post-mortem examination. Symptoms, at most, only warrant a suspicion of the existence of the affection. An important indication is the expulsion, by mouth, of bands of false membrane, provided no symptoms exist to indicate that the air-passages are involved. The expectoration of a membranous cast of the œsophagus is the only positive sign of the disease.

The obscurity which accompanies nearly all affections of the œsophagus is well illustrated by the experience of Steffen. Out of 44 cases, including diphtheria, hyperæmia, catarrhal inflammation, ulceration, ecchymosis, and gangrene, the diagnosis was made in only 3: the remainder were found on post-mortem examination.

Sequelæ.—It is claimed by Leube and Penzoldt[2] that cicatrization of diphtheritic ulcers is followed by narrowing of the œsophagus. Zenker and v. Ziemssen[3] have apparently not observed such a result, but say "it must be acknowledged as possible." Dr. Gendron[4] claims to have recognized and taught, since 1837, that such a contraction may occur after

[1] Seitz (Diphtheria and Croup, Berlin, 1877, p. 349) observed a case in which there were thirst, dysphagia, and frequent vomiting. These symptoms, he says, occur so frequently in severe diphtheria of the throat that no conclusion was formed, during life, of the participation of the œsophagus in the diseased process; at the autopsy the exudation was found to have extended four centimetres downwards into the œsophagus.

[2] Klinische Berichte von der Medicine, Abtheil. des Land Krankenhauses zu Zena-Erlangen, Besald, 1875, p. 125.

[3] Ibid.

[4] Union Médicale, Paris, 1860–2, s. v. p. 569.

diphtheritic inflammation of the œsophagus, and that, in consequence, a dysphagia would be present independently of paralysis of the soft palate or of the pharyngeal and œsophageal muscles. He reports a case that occurred in a man eight days after an attack of diphtheria. Dysphagia was complete; liquids were rejected immediately and provoked a convulsive cough. A gum-elastic catheter was passed with difficulty through a stricture situated below the cricoid cartilage. For twelve days the patient was fed with broth and wine poured through the catheter until deglutition became natural after dilating the stricture.

M. Trendelenburg[1] met with a case in a woman, 37 years of age, which developed after an attack of diphtheria at the age of 25. The stricture was dilated with bougies, and when she left the hospital she appeared completely cured. Four or five years later she returned in a very pitiable condition, and was scarcely able to swallow anything. A second stricture was discovered very far down in the œsophagus, which was so tightly contracted that no instrument could be passed through. Deglutition became even more difficult during the following days, and alimentation by rectum was resorted to. Gastrotomy was performed on the 10th of January, 1878. She recovered and left the hospital at the end of August. It was afterwards learned that the patient died, in her native village, of a febrile disease, and unfortunately no autopsy had been made. M. Trendelenburg concludes by saying, "I am, nevertheless, convinced, after the examination of the patient and the progress of the stricture, that it was neither cancerous nor syphilitic, but purely cicatricial."

ARTICLE II.

THE LIMITATIONS OF COLOTOMY IN DISEASE OF THE RECTUM.

By CHAS. B. KELSEY, M.D., of New York.

MR. BRYANT, in his *Harveian Lectures on the Mode of Death from Acute and Chronic Intestinal Obstruction*,[2] has given us perhaps the most important statistics in favor of colotomy recently published. His advocacy of the operation is well known, and his tables seem at first sight to strengthen his position. He lays down the following general rule:—

"In all cases of cancerous stricture of the rectum or colon, including the annular—which are not amenable to lumbar colectomy or anal excision—right or left lumbar colotomy is strongly to be advocated, with the well-grounded hope of relieving suffering, retarding the progress of the disease, and prolonging life even for five or six years. To secure these advantages it is necessary for the operation to be performed before the pernicious effects of obstruction occur."

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[1] Traité de la Gastrostomie, Dr. L. Henri Petit, Paris, 1879, Case XLI., pp. 261–265.

[2] Brit. Med. Journ., Nov. 22, 1884, *et seq.*

This rule seems to me entirely too broad in its application to be a good guide in practice. Colotomy is a grave operation, as will be shown from Mr. Bryant's own statistics. No one cares to undertake it for the mere sake of doing it, unless it holds out a fair prospect of prolonging life and relieving pain to a degree sufficient to counterbalance the danger of immediate death and the subsequent discomfort which it involves; and in deciding for or against it in any individual case these two factors should be allowed their full weight. Take now the following cases:—

CASE I. *Cancer of the Rectum; Death from Perforation.*—The patient, a young man of 30, was first seen by me in March, 1884, at which time he gave the following history: Until within a year his health had been perfect. Since then he had suffered a good deal from attacks of pain in the abdomen accompanied by diarrhœa. He was in bed with such an attack at the time. The abdomen was a little distended with gas, and there were localized pain and tenderness over the caput coli. He was kept in bed for a few days with milk diet, bismuth, and morphia, and the symptoms passed off; but only to return again after a few days as they had done before; this time, however, without the signs of typhlitis.

An examination by the rectum was so nearly negative that beyond a diagnosis of intestinal catarrh I preferred not to commit myself to any decided opinion even in my own mind. All that I could find out of the way was a marked hardening of the prostate, and a suspicion of increase in size. The change was not sufficiently marked to justify a positive statement that there was anything abnormal, and the patient went to Cuba for a month. He returned feeling better in general health, but with the same diarrhœa.

A second examination showed well-marked scirrhus in the region of the prostate. The tumor could be distinctly marked out with the finger, was the size of a small egg, and projected sharply into the rectum, so sharply that when the finger was introduced it came directly against it, and had to be turned well toward the sacrum to pass by it. My diagnosis was given to the patient's friend, and was confirmed by Dr. Keyes, who made a careful examination with finger in the rectum and sound in the bladder, thus marking out distinctly the whole of the disease.

Although the growth encroached somewhat upon the bladder, there was an absence of any marked vesical disturbance. The patient complained greatly of pain in the region of the tumor, and the diarrhœa continued unchecked. The act of defecation was painless, the passages were watery and mucous, and the general health was well sustained.

Seven months after first seeing the case a note was entered that he was gradually losing ground with the usual symptoms, but no marked change occurred till just a year from the time the tumor was first found, when he had the first symptoms of obstruction. These came on gradually. The diarrhœa at first changed to obstinate constipation, which could with difficulty be overcome by laxatives. The abdomen became distended, the coils of intestine were distinctly visible, and there was much gurgling of gas and fluids. The passages consisted of a drachm or two of mucus and a little blood. By the free use of a pill of belladonna, aloes, and strychnine for two or three days, followed by a saline, the bowels could be induced to empty themselves about once a week, but the constipation was as marked as ever on the following day. This condition lasted nearly a month.

The patient's general condition continued good, the pain had disappeared in the pelvis, and was only such as was caused by the distension of the bowels; and he was at times able to go around for two or three days at a time. There was little change in the size of the growth, and the exact cause of the obstruction began to be a question of interest, for the mass alone was not large enough to obstruct the rectum. The finger could easily be passed beyond it, and a bougie the size of the little finger could be passed the whole length.

Suddenly, and when the patient seemed doing better than for a month past, the obstruction became complete. I had already offered him the chances of prolonging life which might reasonably be expected from colotomy, and he had decided against it. For my own part, I advised neither for nor against it, but simply explained all the bearings of the case as far as lay in my power, and was glad when he decided in the negative.

The question of operation being eliminated, every effort was made to overcome the obstruction in other ways. The treatment was begun by absolute rest in bed, restricted diet, and belladonna. The latter seemed powerless for good even in doses which caused decided delirium. One half a grain of the extract repeated every four hours was well borne for two days; but after that, and indeed during the remainder of the case, a single grain caused a mild delirium with horrible visions, and it was finally abandoned entirely.

Morphine in large doses was substituted after the second day, the diet was reduced to the lowest possible point compatible with sustaining the vital powers—half a pint of bouillon every eight hours—and both massage and electricity were used over the abdomen. On the fourth day the two latter methods of treatment were abandoned, and the sole reliance was placed upon morphine, rest, and diet. The morphine was carried to the point of somnolency and kept there. On the eighth day there was a discharge of wind, which soon became very abundant. Later on the same day the fluid stools began to appear, at first small in quantity, but finally more abundant, and he was relieved. He passed no solid matter, and there seemed none to pass. The abdomen went down one-half, the distended coils disappeared, and the patient was able to go about a little.

This improvement continued one week, during which he lived very carefully on a restricted diet of coffee and toast for breakfast, beef-tea for lunch, and a light meal of soup and fish for dinner. On the seventh day he was sufficiently improved to walk out for a couple of blocks. On the following day the passages again ceased suddenly and absolutely, but without other symptoms. This was April 4th, and the same treatment was followed as before—morphine, rest, and restricted diet with whiskey—but without avail. The abdomen was immensely distended, but there was little gurgling. There were occasional passages of mucus, but no fecal matter. The pulse remained steadily at about 80, the temperature under 100°, and the urine was passed normally. The respirations were kept down to about 12. On the eleventh day of the attack there was a decided change in the character of the passages, indicating sloughing of the mucous membrane. The mucus became more bloody instead of being clear, and the discharge resembled very strongly that which comes from the wall of an abscess after most of the pus has been evacuated. The patient also began to vomit dark, brownish fluid, but having no fecal odor. The pulse at this time ranged about 100, and there was no other change. On the thirteenth day I saw the patient at 9 A. M., and there was no change. At noon his

nurse had noticed no change; there had been no pain; he had slept most of the morning, and there seemed no outward change to my own eye, but the pulse had risen, between the two visits, from 100 to 130. So strongly was I convinced that perforation had taken place quietly, and probably during sleep, that I telegraphed for his friends. About an hour after he had an attack of the most intense pain in the right side, with marked collapse. It was impossible to keep him still, the agony was so great, and morphia in grain doses every half hour made no impression. The sudden pain indicated to my mind the commencement of extravasation. He died in collapse five hours after the pain began.

Autopsy.—The distension of the abdomen was due chiefly to the colon and caput coli, the former being from six to eight inches in diameter. There was considerable fluid in the peritoneum, and many small cancerous nodules spread through the omentum. The perforation had taken place in the ascending colon about four inches from the valve, was large enough to admit the thumb, and there had been considerable extravasation of fluid feces. The real cause of the obstruction was a secondary deposit in the sigmoid flexure which had never been detected during life, though often carefully examined for. It caused no visible tumor even when looked at in its natural position, but when the bowel was taken in the fingers its calibre was almost completely filled with scirrhus.

This was a case of great interest to me—an interest due in part to the gentle character of the man, whose promising life was thus cut short at the early age of thirty—and in part to the important question of treatment which I was called upon to decide. There were many points in the case to which I might call attention: the peculiar location of the growth; the entire absence of all vesical symptoms from a growth in such location; the impossibility of telling what was the cause of the obstruction; and the certainty with which the results of that obstruction could be predicted and recognized when they came. But all these points were of minor importance to the one question of treatment.

The diagnosis was made early. For a whole year I had a chance to do colotomy on that man under what seemed to me exceptionally favorable circumstances. There was no time when he would not have been guided absolutely by my advice, and yet I refused to recommend the operation. I went further than usual in offering to do it if he desired it, but I refused to guide his decision. And yet, up to the time when obstruction became absolute, the case seemed one of the most favorable for that operation I have ever seen. The patient was young and in good condition; the growth was slow and seemed likely to be slow; any other surgical procedure was out of the question from its position; it seemed that a simple opening of the sigmoid flexure above the growth, which could be felt, would prolong life perhaps several years, and, above all, I could have selected my own time for operating and operated early. Even at the last I was rather inclined to the belief that the obstruction was of the nature of a volvulus in the sigmoid flexure, caused by the violent effort of the

intestine to force its contents past the tumor, and that even then life might be prolonged perhaps a couple of years by opening the descending colon.

Suppose, now, a colotomy had been done, how much would have been gained? The diagnosis, though correct, was not complete. The growth in the sigmoid flexure was only suspected, the generalization of the disease all through the omentum not even that. Up to the time when perforation occurred there was no pain which could not be relieved by morphine, which the patient used according to his own needs, being urged to take it freely. It seems safe to say that, without regarding the immediate danger of the operation, it could hardly have prolonged life to any extent. Even if it had, is life, under such circumstances, so much to be desired? This is a question no surgeon can answer for his patient; but this patient, being a man of intelligence and nerve, answered it for himself. He thought not.

Take now the following cases:—

CASE II. *Cancer of Rectum; Ascites; Death.*—Woman, aged 48. This patient gave a history of being sick for about six months. There had been some diarrhœa without blood, some pain in back and loins, and some loss of flesh. For the past month the emaciation had been marked and the abdomen had been increasing in size, while a tumor the size of an egg had been felt in the right lower abdominal region which was painful on pressure. This had disappeared before I saw her. On examination the cachexia and emaciation were very marked. Ascites moderate but very apparent; marked tenderness in left iliac region and over liver; enlargement of glands in both groins; no signs of intestinal obstruction. The uterus was firmly bound down; there was marked tenderness at upper end of vagina on left side; and the rectum showed a fungous mass of cancer at the limit of digital examination, together with a hard mass behind the uterus. The diagnosis was cancer of the rectum, possibly also of uterus, and probably of liver. I declined to do colotomy, and made the patient's way to the grave as easy as possible by other means. There was at no time any marked signs of obstruction, the diarrhœa becoming more and more marked toward the end, and she slowly sank and died in three months and a half from the time of the examination, with all the signs of visceral cancer, but without any marked intestinal obstruction. Her last weeks were made comfortable with morphine, and at no stage of the case did there seem any indication for colotomy.

CASE III. *Cancer of Rectum and Uterus; Death.*—Mrs. M., aged 55. Gives history of bloody passages, pain, and diarrhœa, lasting for one year, with occasional free discharges of blood from the vagina; is emaciated and cachectic. Examination showed cancer of cervix uteri and body of womb, and cancer of upper part of the rectum through which the finger could be passed, and which allowed of the free discharge of feces. She was treated with laxatives and tonics; when necessary, which was not very often, opium was administered; and she gradually sank away, being exhausted by frequent and severe hemorrhages.

In neither of these two cases did colotomy seem indicated or indeed justifiable. In neither would it have prolonged life, though it might materially have shortened it in both. On this point Mr. Bryant's statistics are very instructive.

Out of 60 cases for cancer 26 died within the first month, and 18 within the first week. These he collects together under the heading of "Too Late Cases." Why? Except in two cases where complete obstruction is mentioned to have existed for weeks, and in two others where the bowel was found ruptured above the stricture, no reason appears in the history of the cases as given. Is it to be concluded that, in every fatal case dying within four weeks of the operation, the result is because the operation was done "too late"?

Did the cases die of the disease in spite of the operation, or of the operation itself? The arbitrary character of this thirty-day limit is shown plainly by the fact that in the first table of "too late cases," or those that died *within* 30 days, one is recorded that sank on the 27th day; and in the second table of cases that recovered from the operation one is reported that sank *on* the 30th day.

From a mere table of cases without any histories except the most meagre facts it is of course impossible to tell what reasons Mr. Bryant may have had for judging that these cases were all operated upon too late except the fact that they died from the operation. Doubtless they were good ones. If good ones, they should be evident before operating, and if so why operate? In only a few cases does the *post mortem* seem to show that the operation was too late; in almost all it would seem that the condition was as well known before as after death. Take the numerous cases which are marked as follows: Stricture of rectum, sank on 2d day, sank on 4th day, sank on 5th day, etc. There is no reason to show why they sank. Would none of them have died had the operation been done sooner? The criticism on the group is simply this: If in these cases the constitutional or local state was such that before the operation it could be said, if this case dies it will be because the operation was done too late, a good many surgeons might hesitate to take the risk of shortening the unknown number of days or weeks which might still have been left to the sufferer who must soon die at any rate. If, on the other hand, the condition was such that the chance of recovery seemed good and yet they died, may it not be asked whether the death cannot fairly be attributed to the fact that the operation was done at all?

There is another way of looking at this table. Eighteen cases of cancer of the rectum died within a week of being operated upon, and twenty-six within the month. What is the total number of days of life which were lost by an attempt to gain more? How long might any one of them lived if not operated upon?

Passing now to the 34 of the 60 cases that recovered from the operation: concerning these, Mr. Bryant makes three claims, some of which will be admitted readily enough, others not so readily. His second one will pass with the least question: that the operation relieves the pain caused by the passage of feces through the narrowed and probably ulcerated lumen of

intestine, and the ineffectual efforts of the bowel above to pass on its contents. In certain cases this is undoubtedly true, but in cancer of the rectum the passage of feces often causes little pain to the end. Not in every case, by any means, do we find either much ulceration or any obstruction. The disease may run its course, become generalized, and kill, before a scirrhous mass will ulcerate or cause stricture. In such a case the pain is not due to the passage of feces over the disease, or to the act of defecation itself, and can scarcely be relieved by colotomy. In any case in which the condition mentioned obtains a sufficient extent that colotomy with its risks of immediate death and its subsequent annoyance is considered preferable, the operation is certainly indicated provided nothing else is believed to be as good or better. Among the 34 cases we find a few where this condition is plainly stated. Case 6, "extensive rectal ulceration supposed to be cancer and stricture;" 7 and 14, "cancerous stricture of rectum and anus with fecal fistula;" 9, "cancerous stricture of rectum with recto-vesical fistula." In none of the others can we judge of the exact condition except by the diagnosis of cancer.

Another point claimed by Mr. Bryant is that colotomy retards the progress of the disease by removing from its presence a source of irritation, the passage of feces. His opinion on this point is of the greatest value, and will go far to offset the opinions of those who disagree with him, but, with all respect, is it not simply an opinion, and how can the matter be proved? At first sight the statement would seem reasonable and probable, but to get any further than this is exceedingly difficult. A sufficiently large number of cases carefully selected as bearing on this special point might be of help by enabling us to deduce an average duration of life; but the cases would need to be selected ones. Not every case of cancer of the rectum would serve for this purpose, but only those in which the passage of feces plainly served as a source of irritation. From these would need to be deducted all those in whom colotomy was fatal within a short time as not bearing on the question. The remainder might be compared as to length of life with an equal number of the same class of cases on which no operation had been done, and the result would have a certain scientific value, and yet would be of very little use as applied to any particular case. This I believe has never been done, and it is perhaps not too much to say that the question whether colotomy does retard the growth of cancer of the rectum is still a question.

Mr. Bryant's third point is that colotomy prolongs life, "probably for one or two years, and possibly for four or five years," and at the same time saves the patient from a painful and miserable death, that from obstruction; whilst, at the same time, it leads the patient to his last home in as painless and quiet a way as can be desired. There is much truth in this, and yet it is well to see just how much. In the second table of 34 cases of cancer, 8 left the hospital convalescent, and the length of life

after the operation is not stated; and one was alive five years after, but upon this one Mr. Bryant himself casts a doubt by entering the diagnosis as "supposed cancer of the rectum. Symptoms 18 months. Blood and mucus," so that it probably would not be wrong to drop it out; thus leaving 25 cases in which the length of life is known. Of these 25, 9 died within six months, and 16 within a year, while 4 more dropped off within 18 months. There is one case of 21 months, one of 26, one of 33, and one of 41. This, it must be borne in mind, is in selected cases, in those in whom the operation was not immediately fatal. The bad cases (nearly 50 per cent. of the whole) are thrown out beforehand.

Do these figures justify its being accepted as a rule that in cancer of the rectum colotomy prolongs life probably from one to two years, and perhaps four or five? Out of 60 cases, 18 are dead in a week, 26 in a month, 35 in six months, and 42 in a year, 8 are not followed up, and 1 is doubtful in diagnosis.

It still remains that in certain cases colotomy will do all that Mr. Bryant claims for it. It will prevent death from obstruction, and it will give great relief from pain. It is a most valuable palliative measure in some cases of cancer of the rectum—cases beyond the reach either of excision or division, and in which all other measures have failed. At the same time it is a dangerous operation, and it is by no means proved that it prolongs life in any other way than by avoiding or relieving obstruction in those cases (and they are only a certain definite proportion of them all) in which obstruction occurs.

To go back to Mr. Bryant's original proposition that colotomy should be done in all cases "which are not amenable to lumbar colectomy or anal incision." Not stopping to discuss lumbar colectomy (which, the last time we heard of it, had been done ten times, with five immediate deaths as a direct result of the operation,[1] and which, in a certain number of selected cases, seems to hold out a goodly chance of giving relief), what becomes of the operation of proctotomy? Is not this yet a recognized surgical procedure? Take the following case:—

CASE IV.[2] *Cancer of Rectum; Proctotomy.*—Married woman, aged about 55, subject of extensive cancerous disease of the rectum. Had already had one attack of fecal obstruction, which was very nearly fatal, before I saw her, but was finally relieved by laxatives. The disease was scirrhus, began within the sphincter, and so completely closed the bowel that no passage could be detected by the finger. By vaginal examination it was found to extend as far as the finger could feel. The patient had been under treatment two years before I saw her, and the disease was probably of longer duration. Her general condition was still good, there was no abdominal distension, and I determined to attack the disease *in situ*. This was done with Paquelin's cautery.

[1] Kelsey, Diseases of Rectum and Anus. N. Y., Wm. Wood & Co. Ed. of 1884, p. 357.

[2] Previously reported in part.

The operation was long and difficult. The sphincter was first burned through down to the tip of the coccyx, and the rectum held open with retractors. The growth itself was next attacked at the place where a slight depression seemed to indicate the passage must be, and I soon had the pleasure of entering with the knife a considerable cavity in the rectal pouch surrounded on all sides with scirrhus. Above this the gut was again so completely occluded that no passage could be discovered, and the operation consisted simply in burning through the mass in the dark, being guided solely by the natural course of the rectum in health, and keeping well toward the sacrum.

The operation lasted more than three hours. It seemed towards the end that the disease might run too high for the upper limit to be reached, but the knife finally entered a cavity which it was a great relief to discover was the dilated rectum, and not the peritoneum, as I half suspected it might be. The remainder of the operation consisted simply in enlarging the passage thus made by burning away as much tissue as possible, and when finished two fingers could easily be passed.

Not an ounce of blood was lost, the parts were dressed with a cold compress, and the rectum kept clean by the use of injections of chloral in water twice a day. After the third day the bowels were encouraged to act by laxatives, and did so with surprisingly little pain. On the tenth day there was a smart secondary hemorrhage, which, however, ceased spontaneously after the patient fainted. This was the only accident, and in a few weeks the patient was again about her daily duties, more comfortable than she had been for a long time. The comfort continued till the time of her death, eight months after the operation. The death was due to a slow process of exhaustion, and not to obstruction.

Here we have a case certainly not amenable to either lumbar colectomy or anal excision, and yet if it had been in Mr. Bryant's table it would have helped up the favorable statistics of colotomy—provided it had not "sank" on the 2d or 5th day. The woman was saved from immediate death, lived in comfort eight months, and died in comparative ease. Can colotomy show any better average result? If not, every reader may choose between her condition and that of a patient with an artificial anus in groin or loin.

Mr. Bryant's second proposition is that

"Lumbar colotomy is valuable as a curative operation in syphilitic and simple ulcerations of the bowel which resist other treatment, including cases of recto-vesical fistula; and it is remediable in examples of volvulus of the sigmoid flexure, as well as of obstruction caused by tumors."

This statement does not admit of argument. In his table of colotomies for non-cancerous disease, such as syphilitic stricture and ulceration, obstruction from pelvic tumors, and recto-vesical fistulæ, the results are much better, and there is much less ground for discussion. In these cases the operation is often curative, and moreover, it is often the only method of relief. We point out only the high death-rate, 7 cases in 22, and then ask attention to some of the "other methods of treatment." Recto-vesical fistula is left out of the question, all that Mr. Bryant claims being freely admitted. Take now the following case of pelvic tumor:—

CASE V. *Pelvic Exudation Occluding Rectum.*—Mrs. S., aged 50. Had pelvic cellulitis and peritonitis four years ago, since which has always suffered greatly from pain. About one year ago began to notice increasing trouble with the bowels. The constipation became marked and troublesome, so that she never had a passage of any amount without medicine. There was blood in all the stools, sometimes in considerable quantity, and a bloody and mucous discharge in the morning attended by pain, tenesmus, and a constant desire to relieve the bowels, which she never seemed able to satisfy. The patient was weak, emaciated, and nervous.

An examination showed a hard mass between rectum and uterus, which by its pressure almost completely occluded the former. This mass, though easily felt by the finger in the rectum, was absolutely immovable and unyielding to any amount of force which it seemed safe or even possible to apply to it with finger or bougie. The tip of the finger could be introduced between it and the sacrum, but could not be forced any further. Above this point there was a considerable accumulation of feces, and the usual ulceration and dilatation found associated with stricture.

The patient was suffering from chronic intestinal obstruction. All attempts to pass a bougie beyond the obstruction had failed; nevertheless, I determined to try what could be done to produce absorption of the mass and restore at least a portion of the lumen of the bowel. Without very much difficulty I succeeded in passing the smallest sized soft-rubber bougie at her second visit, and from that time on the progress was quite satisfactory. The treatment consisted in the passage of a bougie twice a week, the administration of laxatives to secure daily passages from the bowels, the regulation of the diet, and support of the general health. I succeeded after a time in unloading the bowel above the stricture and in keeping it from filling a second time; and at the end of four months a No. 7 bougie could be passed, and the patient was having daily well-formed passages often the size of the index finger. Beyond this point dilatation seemed impossible, the mass being absolutely unyielding, and recourse was had to two other therapeutic agents, hot water and galvanism. Skene's rectal irrigator was introduced as far as the obstruction every other day, and from three to four gallons of water used. The patient would bear without discomfort water too hot for the hand to bear, and the effect was good. She is still under treatment.

In this case there were but two lines of treatment to be chosen from: one, that which was followed; the other, colotomy. The idea of cutting into the tumor and trying to enlarge the passage in this way did not seem feasible. When first seen colotomy would certainly have been a justifiable and proper mode of treatment, and had the other not succeeded it would have been resorted to and would have given relief. Still, I doubt whether the relief would have been any greater than that which followed the other plan. The patient is far from well now. The ulceration is still present and causes the usual symptoms, and there is small chance of curing it, but she is in no danger of obstruction; there is sufficient opening for the bowels to relieve themselves, and from the nature of the obstruction recontraction does not seem probable. In fact any change in the tumor itself as time goes on will probably be in the nature of absorption, and hence be beneficial. The patient is comfortable, is able to

attend to her household duties, to go out, and to enjoy life; and with proper care will probably continue so. I may in the end be forced to do a colotomy, but I do not expect to. Meanwhile she is much better off than she would be with an artificial anus.

The following case is also an example of some of those other means which may be used besides colotomy in cases of non-malignant ulceration.

CASE VI. *Ulceration and Stricture of Rectum; Fecal Fistulæ; Division; Cure.*—This woman had suffered so much, and was in such a reduced condition, that she was sent to me for the express purpose of having a colotomy performed. The disease may have been syphilitic, or it may have been simple. I never could decide; but the ulceration involved the whole circumference of the lower three inches of the rectum, and had resulted in a tight stricture about two inches up, with two fistulæ. It had been nicked more than once, and dilatation had been practised until it could no longer be endured. The patient was much emaciated; in a very depressed and nervous condition; never had a passage when she could avoid it on account of the suffering, and could not bear the introduction of the finger without ether. The stricture was cut, with everything below it, down to the tip of the coccyx; the fistulæ were laid open at the same time and the ulcer scraped over, and touched in parts with nitric acid. She immediately began to improve, and now, four and a half years after the operation, considers herself comparatively a healthy woman, though she uses a bougie upon herself twice a week. There is still a little ulceration, and a little discharge; but after the bowels have moved in the morning she has no trouble for the rest of the day, and she has no pain at any time.

Had this result been obtained by colotomy, it would have been considered an exceptionally favorable one. It was obtained by means much less dangerous and infinitely preferable.

I do not wish to be considered as arguing against colotomy *in its place.* And in closing let me say that while Mr. Bryant has so ably shown from his own large experience what can be done by colotomy, I have simply tried to show what can be done in a few cases without. His article is one of the most valuable contributions to the subject ever made, and cannot fail to be so considered and prized accordingly. It is far from my purpose to criticize the article, or to detract from the value of one of the certain means by which the pain of an incurable disease may be alleviated, and a life sometimes prolonged. In emphasizing one method of treatment, Mr. Bryant has not, in his own mind, or his own practice, slighted others; but it is possible that this may not be the effect upon some of his readers. Colotomy is a much more attractive surgical operation than keeping up gradual dilatation for a number of years, especially in dispensary practice, but because Mr. Bryant has found 82 cases in which it was necessary, it is not proved to be either necessary or suitable in the first case of rectal stricture met with by another. Take, now, the following cases:—

CASE VII.—Mrs. N., aged 38. In this case there was a full syphilitic history, and the stricture, which had existed ten years, was probably of syphilitic origin. It was located two inches from the anus, was very tight, but not of very great extent. Above it there was a good deal of ulceration with the usual symptoms. She had been operated upon three times by nicking, each time with temporary benefit. Refusing a more radical operation by proctotomy she was treated by gradual and progressive dilatation until the stricture easily admitted a full-sized bougie. Applications of iodoform and of strong solutions of nitrate of silver were also made to the diseased surface above the constriction. After two months of this treatment the patient was having one full-sized, natural, painless passage once a day, and he ceased attendance, probably to return in a year or so as bad as before.

This is one of the cases in which I believe colotomy may almost be said to be absolutely unjustifiable; other and milder measures being amply sufficient for the relief of the patient.

CASE VIII.—Mrs. B., aged 38. Gives a history of rectal disease dating back eight years, but no syphilitic history can be obtained. During the nine years of married life before the rectal symptoms began she had five healthy children, all of whom are now alive. Has never had a miscarriage. She was greatly emaciated, the kidneys were diseased, and she seemed to be nearing the grave. On examination the whole anal region and both buttocks were found to be extensively diseased. They were brawny, hard, infiltrated, and full of fistulous openings from which pus escaped on every movement. The pressure of the finger on the right side caused an escape of pus from the openings on the left, and *vice versa*. There was a large abscess cavity on each side of the anus filled not only with pus but with stercoraceous matter, and I counted fourteen separate fistulous openings, some of them outside of the trochanters. The anus was so surrounded by cutaneous tags that it was difficult to locate it, and the finger in the rectum encountered a stricture involving all of the rectum within reach, but of sufficient calibre to permit the passage of the index. The nature of the stricture was difficult to determine, but it bled freely when touched, and seemed more probably cancerous than anything else.

In this case colotomy was advised, but little hope was held out of a successful issue, and the patient disappeared, rather to my relief. Had she been in better condition generally, had there been no waxy kidneys, I should certainly have attacked the disease locally, first doing a proctotomy, and subsequently operating on such of the fistulæ as refused to close. But the sufferer was to my mind too far gone to render any operative measure at all desirable, and she probably died within a very short time of my seeing her. The patient was a poor woman in the lower walks of life, and was one of a large class who by simple neglect sacrifice all hope of relief. It was a case eminently amenable to treatment up to the time when on account of the general condition the treatment bid fair to shorten rather than lengthen life.

CASE IX. *Cancer of Rectum.*—Male, aged 31. The symptoms had lasted nearly two years, and he had lost forty pounds of flesh within a few

months. Although there was a full syphilitic history, the diagnosis of cancer was made by both Dr. Keyes and myself. On the day before I saw him he had for the first time had some symptoms of obstruction. On examination a mass of scirrhus was found surrounding and nearly occluding the rectum at about three inches and a half from the anus. He was still in good condition, and the choice of operation lay between colotomy and proctotomy. I advised the latter, but the patient left the city without having anything done, and when heard from, a few weeks later, was slowly dying.

CASE X. *Cancer of Rectum; Excision; Death.*—Male, aged 55. Symptoms of rectal disease for eighteen months. Examination showed a circumscribed growth on anterior wall of rectum about three inches from anus, which could easily be removed by écraseur. No other disease was found, and the patient's condition was good; the growth was therefore removed. He sank and died on the third day. *Post mortem* showed much more extensive disease than had been anticipated; the whole sigmoid flexure being involved.

In this case colotomy might have been of some use; excision certainly could not have been.

CASE XI. *Cancer of Rectum.*—Miss A., aged 52. Began to notice blood in passages four years ago, with some protrusion at stool. Has not had much pain; there is some emaciation, but the general condition is still good. On examination the patient by straining brings down and out of the sphincter a large cauliflower growth which surrounds the bowel anteriorly and on each side at about three inches from the anus. The whole mass is extruded in each act of defecation and bleeds freely, but is easily reduced by the patient. There is no contraction, and whatever obstruction there is is due merely to the presence of the soft mass projecting into the rectum. An excision was advised, and the patient returned to her attending physician.

What, then, are the indications for colotomy?

1. In congenital malformations of rectum or anus in children in which a tentative operation in the perineum has failed to reach the rectal pouch.

2. In intestino-vesical fistulæ.

3. In tumors occluding the rectum which cannot be relieved by any other means—dilatation, division, hot water, or electrolysis.

4. In non-cancerous, simple or specific stricture and ulceration of the rectum (with or without fistulæ), where the disease cannot be relieved by proctotomy or dilatation, or division of the fistulæ and local treatment of the ulceration.

5. In cancer where the disease can neither be removed nor the passage re-established, and where death is probable from obstruction—except in cases where the immediate dangers of the operation more than counterbalance any good likely to be gained by it.

6. In volvulus or intussusception of the colon or sigmoid flexure, where reduction by the aid of laparotomy has been found impossible.

THE MADISON, 25 Madison Ave., N. Y.

ARTICLE III.

AN EXPERIMENTAL RESEARCH UPON THE INFECTIOUSNESS OF NON-BACILLARY PHTHISIS.

By E. L. TRUDEAU, M.D., Saranac Lake, N. Y.

AMONG the facts which must still be explained before Koch's bacillus can be unequivocally accepted as the sole and direct cause of tubercular disease, none, perhaps, needs elucidation so much as the undoubted occurrence of what may be called non-bacillary phthisis. I do not here refer to those chronic inflammatory conditions of the lungs which are the result of some distinct and thoroughly appreciated irritation, such as nailers' and stonecutters' phthisis, but to the undoubted occurrence, as acknowledged by Koch, and insisted on by Formad, Prudden, and others, of a small proportion of typical phthisical cases whose expectoration during life is found at all times free from bacilli, and in whose tissues after death, though many lesions morphologically identical with tubercular disease are present, the most careful research fails to reveal any of Koch's specific micro-organisms. Experimental research into the nature of these cases has seemed to the writer of special interest, because they are as yet so little understood, and here we can procure material from an apparently phthisical source yet free from the micro-organism upon which the causation of tubercular disease is claimed to depend.

It has been pretty clearly shown that the bacillus does produce tuberculosis in animals even when separated by culture for many generations from the pabulum in which it is originally found, but exact knowledge as to the effect of inoculations with the pabulum itself when free from those organisms is a link yet missing in the chain of evidence which from all sides now tends to inculpate the bacillus.

Though Sternberg has shown that tuberculosis cannot (as was once believed) be induced by the introduction into animal organisms of finely divided particles, yet the possibility of producing it by inoculation of material taken from patients presenting all the familiar symptoms of phthisis, after such material had been shown to be free from bacilli, seemed to the writer worthy of trial. The object, therefore, held in view has been simply to demonstrate whether non-bacillary phthisical sputum possesses any infectious qualities. If, on the one hand, it were found to produce tuberculosis in the animals operated on, then the bacillus could not be accepted as the sole cause of this disease; if, on the other, no constitutional infection resulted from such inoculations, the evidence thus procured must tend to strengthen the sinister claims of Koch's micro-organisms, and strongly suggest the duality of phthisis.

The first step was to find a patient presenting all the rational and physical signs of confirmed phthisis, whose expectoration should, at all times, be found free from tubercle bacilli. Thirty cases were examined before

one meeting all the requisites was encountered. The methods employed were Ehrlich's and Koch's modification of Ehrlich's, preference being given to the methyl violet over the fuchsin stain.

In 21 of these 30 cases the bacilli were demonstrated in the first slides examined; in 8 cases, repeated research, extending in two instances over two weeks, was necessary before the presence of the microbes was satisfactorily ascertained, while in one only did constant and careful examinations, carried on for over a period of two months, meet with entirely negative results. No precaution was neglected which would give the assurance that no bacilli were at any time present in the expectoration of this patient. Twenty examinations, from one to four days apart, were made before the material to be used was collected, and occasional observations were continued until the experiment had been concluded. The sputum was evidently non-bacillary and remained so throughout. The microscope always showed, in varying proportions, pus-cells, blood-corpuscles, epithelium, from the mouth, and some granular matter, with occasionally a few elastic fibres; the usual putrefactive bacteria found in similar material were not seen, having been decolorized by the nitric acid used. A history of the case is appended in note form.

Bearing in mind the danger of external contamination, as demonstrated by Sternberg's researches, every precaution was taken to guard against such an accident. The sputum was collected in a sterilized bottle with a sterilized cotton plug, and the injections were made with a previously sterilized (by heat) asbestos packed hypodermic.

The animals selected were twelve full-grown rabbits. Four were inoculated with bacillary sputum from a patient with chronic phthisis; four with the expectoration of a healthy person attacked with acute bronchitis; while the remaining four were injected with non-bacillary phthisical sputum from the case selected. The punctures were made in the anterior chamber of the right eye and on the left side of the neck at the same time, and on these places from one to two drops of the morbid material were deposited. The entire mass of infecting material was invariably thoroughly mixed by being subjected to the action of a sort of egg-beater (sterilized by heat), rapidly revolved by means of a multiplying crank. The animals were then kept entirely separate under the best possible conditions with respect to food, light, and air. The bacillary ones were killed two months after inoculation; both of the other lots a little over three months from the time of injection. In the animals injected with bacillary sputum the results were much the same as found by other observers; in each case one or more caseous abscesses of good size were present at the point of puncture in the neck, and tubercular iritis or cheesy abscess on the eye operated upon, enlarged cervical and axillary glands, swollen lymph-ducts, and in one instance a nodule or two in the lungs and liver. The enlarged glands looked like common hyperplastic glands, but in the largest the microscope revealed evident tubercles. In every case at the point of inoculation, and

in a few of the more advanced lesions, tubercle bacilli were easily demonstrated. Had the animals been kept longer, the lesions would evidently have soon become more extensive.

In the four rabbits injected with the sputum of simple bronchitis, and killed three months after inoculation, the results were as follows: One rabbit was accidentally injured two weeks from the beginning of the experiment and died in consequence; of the three remaining ones, one only showed entire absence of any lesion, the points of puncture even having become entirely effaced. In the third animal a very minute cheesy abscess remained in the neck and an enlarged gland in the axilla; this enlargement proved, however, purely hyperplastic, no tubercles or cheesy foci being made out. In the fourth rabbit two minute yellowish spots remained on the neck under the subcutaneous tissue, and some opacity of back part of cornea on the anterior chamber; all the organs were healthy. The most thorough search failed to reveal any bacilli in any of the slight lesions, though all were examined.

The results of inoculation with non-bacillary phthisical sputum are given somewhat more in detail.

Animal No. 1.—Inoculated March 7, 1885, on left eye and right side of neck with non-bacillary phthisical sputum. April 21. Only slight scar in cornea visible, no change whatever in iris. June 8. Rabbit killed and found in excellent condition. Nothing whatever abnormal can be detected in the eye; in the neck the point of inoculation is made out with difficulty as a minute yellowish spot. Stained sections show no bacilli; all the organs perfectly healthy.

Animal No. 2.—Injected March 7. Same as No. 1. April 22. Cornea opaque, with yellowish spot in centre of pupil; no enlargement can be felt in the neck; animal killed June 9th. Cornea found opaque, with adhesions to iris; sections of scar and of opaque material from anterior chamber show no bacilli, nor anything like tubercular changes. Point of inoculation on neck cannot even be made out; the organs, carefully examined, present no abnormal appearance whatever.

Animal No. 3.—Inoculated same as others, March 7. April 22. No nodule can be felt on the neck. Left eye shows a small spot in centre of pupil of a yellowish color. Rabbit killed June 12th. All the organs healthy. No trace of the operation can be detected in the eye, except a slight hernia of the cornea at point of puncture. In the neck no trace of the operation remained, but a slightly enlarged gland was found in the right axilla; sections of this showed merely hyperplastic growth, no tubercle tissue being made out. The material from anterior chamber stained after Koch and Erlich, and sections of the gland similarly treated, show no bacilli.

Animal No. 4.—March 7; inoculated same as the others. April 22; enlargement of neck can be felt, and extensive inflammatory changes seen in the eye; perforation of cornea with discharge of thick pus through the wound. Rabbit killed June 17. Point of puncture in neck could not be made out; no enlarged lymphatics; all the organs healthy; cornea is opaque, adherent to iris, and behind the eyeball is a large abscess, which on section discharges thin pus. Stained sections from the eye, pus from abscess behind the ball, and liquid from anterior chamber show no bacilli.

Thus, tubercular lesions more or less extensive, and containing tubercle bacilli, were produced in all four rabbits injected with bacillary sputum. Slight localized inflammatory lesions, containing no bacilli, were produced in two out of three animals, when the sputum of acute bronchitis in a healthy subject was used as an infecting agent.

Finally, in all the four rabbits injected with non-bacillary phthisical expectoration, slight, purely localized inflammatory changes resulted, in none of which tubercles or the characteristic bacilli could be detected. A significant hint in favor of the inflammatory nature of the slight lesions present is given in the fact that in the eye only, which is necessarily more susceptible to interference, were any changes caused by the introduction of the morbid material, while in the neck all trace of the operation had in all but one case disappeared.

It may be urged that possibly the patient from whom the sputum was obtained was not suffering from phthisical disease at all; if so, we must acknowledge our inability to diagnosticate the disease, for the case presented all the rational and physical signs of pulmonary tuberculosis, and until the sputum was examined nothing led to any suspicion that it differed in any way from the many others under observation. The bacillary and non-bacillary sputa employed are identical microscopically, save so far as the presence or absence of the specific bacilli is concerned, and the symptoms were almost entirely similar in every detail in both patients; yet in one case, the bacillary, general infection was at once caused in the animals injected, while in the other trifling localized lesions alone were induced. Such evidence must tend to strengthen the sinister claims of Koch's bacillus, and another failure recorded in an attempt to produce tuberculosis without its agency.

The results of this study may therefore be summed up as follows: (1) Non-bacillary phthisis is a comparatively rare disease. (2) Though clinically almost identical with bacillary phthisis, it differs from it in being non-infectious. (3) Non-bacillary phthisical sputum can be added to the list of agents which have been unsuccessful in producing tuberculosis. (4) All evidence so far tends to prove that the tubercle bacillus is necessary for the production of the disease artificially; and this study brings additional proof to the views expressed by Burdon Sanderson, and insisted on by Sternberg, that "whenever an inflammation becomes infectious, it owes that property to chemical changes in the exudative liquid of which the presence of microzymes is a necessary condition."

History of Case Selected for Experiment.—Mrs. M., æt. 45, housekeeper, has never been strong; can only remember her great-aunt as having died of phthisis; had no brothers or sisters; has never worked in dust specially, nor inhaled any irritating vapors; coughed in the winter of 1881–82, but her general health was fair until 1883, when she had increase of cough, fever and sweats began, and she steadily lost flesh and strength; for a year she had been almost constantly confined to the house. In December, 1884 (at the time of experiment), her condition is as follows:

Emaciated, debilitated, coughs constantly, and expectorates from two to three ounces during 24 hours of thick muco-purulent sputum, occasionally some blood; has anorexia, hectic in afternoon, night-sweats, and marked dyspnœa on exertion; pulse 90 to 120; respiration about 26 while at rest; temperature ranges from subnormal in the morning to 101° to 102½° F. in P.M. Two swollen glands can be seen in the neck. Physical examination: Marked depression under both clavicles, expansion only one inch; increase of vocal fremitus at apices, especially the left; under clavicle on this side faint broncho-cavernous respiration can be heard with coarse and fine rales; on right side in infra-scapular pleuritic rales without marked dulness, while at apex of same side there is entire absence of breath-sounds, with some fine crepitation.

Since the beginning of experiment patient has lost ground steadily.

ARTICLE IV.

THE CHOICE OF METHODS IN ABDOMINAL DELIVERY. By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

THE "old," or as it is sometimes erroneously called the "classic" Cæsarean operation, is very rarely performed at the present day, according to its original type. The abdominal and uterine incisions are usually made in the median line as of old, but after the fœtus has been removed, the whole character of the remaining process is changed. The abdominal cavity is now cleansed, and antiseptics are used in it and the uterus; and the same are employed in the external dressings. The uterine wound is rarely left to the closure effected by muscular contraction, but is now secured by sutures of different materials, and inserted after different methods, some of which are very ingenious. Drainage of the abdomen and uterus is by some thought imperative, and antiseptic irrigations of the abdominal cavity advisable by others, where puriform discharges are forming. Every imaginary scheme for preventing death by peritonitis and septicæmia is employed, and still the mortality is on the increase in the United States. Why is this? Because improved plans of dressing, antisepsis, drainage, and the uterine suture can never be made to overcome (what is evident in almost every case) the unfavorable prognostic condition in which the operator, who is rarely the original attendant, finds the woman, when at last the accoucheur, after vainly trying a variety of expedients, has become convinced that the knife can alone deliver his long-suffering patient.

The introduction of the uterine suture was certainly a valuable aid to the old method, in securing the wound against gaping, and allowing the escape of fluids into the abdominal cavity. It has, no doubt, enabled the operator to save patients *in extremis*, who must otherwise have been lost, but it cannot be made to work miracles in cases where the knife should

have been used hours or days earlier. That it has become a popular improvement in our country is shown by its general introduction; and much greater expectations have been formed from it than have been realized in practice. Still the impression is that it has not had a fair opportunity to show what its true capabilities are in cases not rendered almost hopeless by delay and futile attempts at delivery. When will the accoucheurs of the United States realize the fact that the high rate of mortality lies at their door rather than at that of the operator?

Before 1867 the uterine suture had been used in our country but thrice, *i. e.*, in 1828, 1851, and 1852. In the next twenty operations after the advance of 1867, sutures were used in seven; in the succeeding twenty, in eight; and in the closing twenty-four, in eighteen: only in three cases out of the last nineteen were they not employed. There was certainly very little to encourage their use in the results of the cases in which they were used; but still the operators were convinced that the fault was not in the sutures, or their want of skill. We are sorry to draw such a picture as must be shown by the results of the last decade; but the truth is, that of the 38 Cæsarean operations performed in the United States since January 1, 1875, 29 were fatal to the women, and 21 to the children. Of 17 children delivered alive, one was premature and died in four hours, another had a fractured skull and lived one day, and two others survived respectively two days, and thirteen were diseased from their birth. Thus then we may say, that the operation saved in this period $23\frac{4}{19}$ per cent. of the women, and $33\frac{1}{19}$ per cent. of the children. Where more than three-fourths of the women, and nearly two-thirds of their children were lost, there must have been a great deal of bad management of the cases prior to the operation. As 21 children were dead before delivery, we have a very presumptive proof of want of skill in management. 28 of the women were in labor from one day to two weeks, of which 15 were in labor more than three days, and 7 of these again were 4 days and upwards. This record of delay explains our frightful retrogradation as compared with earlier reports.

We next come to the consideration of a more encouraging record of cases, mostly European, in which the chief element of success was a new method of suturing the uterine wound, devised by Dr. Sänger of Leipzig, in 1881, and more recently simplified by other operators. This method, although having very decided merit, cannot overcome the evil influence of delay, and the table I have prepared will show at a glance the importance of having the patient in a favorable condition for the operation at the time it is entered upon. It will be noticed that three of the cases occurred in this country, all fatal, and that but one child was saved, while one German operator, Dr. Leopold, saved 4 women and 5 children by 5 operations; the difference of result being very largely due to the difference of condition in the women at the time of the operation. Case 3, for

instance, was admirably conducted by Dr. Garrigues of New York, and the woman had been but a few hours in labor; still he lost his patient, because of her condition produced by an ante-partum hemorrhage. Case 9 might have been regarded as almost hopeless at the time of the operation, from the effects of existing disease, long delay, and hemorrhage. It had been thought by the accoucheur to be one of extra-uterine pregnancy, with the fœtal head in the Douglas cul-de-sac. The operation established the fact that the peritoneal part of the uterine wound, when the serous surfaces are secured in contact, may unite as early as 26 hours after the operation. Case 5 belongs to a class which has been much the least fatal in Great Britain, after the old Cæsarean method, and should have escaped death, had her surroundings in hospital and her physical strength been more encouraging. This makes the seventh gastro-hysterotomy in our hospitals, all of which have proved fatal. In this case it will be noticed that the entire uterine wound had healed during the survival of 45 hours.

The method of Dr. Sänger is based upon the facts, that the serous surfaces of the peritoneum may be made to unite rapidly by a circumscribed adhesive peritonitis of a salutary character, if they are sutured in contact; and that welting this membrane into the uterine wound, by numerous superficial sutures, somewhat after the stomach and intestinal closure of Gély, will secure the wound against leakage and its resulting dangers. The full process of Sänger is quite complex, and it has been found in practice that both the dissecting up of the peritoneal coat, and cutting away a wedge-shaped slice of the muscular, were not absolutely essential to success. After the uterus contracts, its greatly diminished size so loosens its outer coat that it may be readily slid over the edge of the wound and turned in, as was done in Cases 3, 5, 9, and 12. Where the uterus is thickened and solidified by fibroid degeneration, as in Case 9, the membrane does not so readily slide, as where the uterine contraction is normal and more complete. The separation of the peritoneum by the knife makes a deeper welt, and the resection of the muscular coat one still deeper, but this loss of substance must weaken the ultimate cicatrix, and certainly can be avoided if the operation is performed in good season. In August, 1884, Dr. Leopold reported that his three patients were all living and in good health, and that the children were also well, the latter being then aged respectively 4 years and 3 months, 10 months, and 5 months. He stated at that time that he intended in future operations to avoid the resection and separation, as not essential to success. In Cases 11 and 12 will be noticed his more simple modifications and their results. Dr. Garrigues's and Dr. Jewett's cases proved under autopsy that entire union from peritoneum to mucosa could be effected without the separation or resection; the operation of Dr. Garrigues antedating all of Dr. Leopold's, except his first.

In Dr. Sänger's last monograph, which he was kind enough to send me, and to which I am indebted for the German cases in my table, are several designs for suturing the uterine wound, some of which are complex, but certainly very ingenious. I introduce here the two which have the most practical character, particularly the first, in which the deep and superficial sutures are tied separately. A third figure shows the superficial stitch used by Dr. Drysdale in his operation, the tightening of which draws the peritoneum into a welt, as seen in the lower illustration.

Fig. 1.

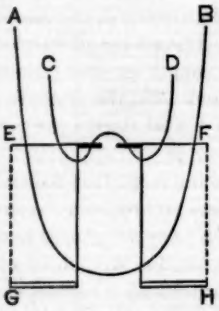

Fig. 2.

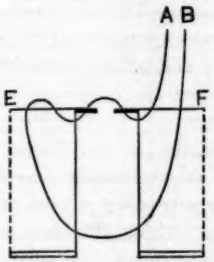

Fig. 1, A. B. represents the line of the deep-seated suture, which is carried down nearly to the mucous membrane; C. D. shows the direction of the superficial suture, the tightening of which will turn in the peritoneum, and draw the serous surfaces in contact.

Fig. 2 shows how the deep-seated suture of Fig. 1 may be made also to supply the place of the superficial one C. D. It is a much better plan to have two sutures, and let the greater strain come upon the deep-seated one. It is of advantage to have a large number, as there is less individual tension, and less danger of gaping.

Fig. 3.

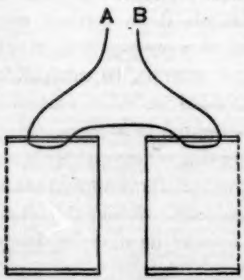

Fig. 4.

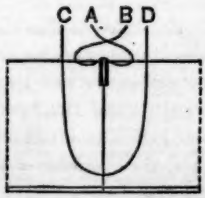

Fig. 3 shows a modification of the intestinal suture of Gély. When the superficial stitch is drawn upon, the peritoneal edges are to be turned in by the handle of a scalpel or other flat, blunt instrument. In cases where the serous coat is not loosely attached, it will be of advantage to dissect it up around the wound, as recommended and practiced by Sänger.

A third choice in the mode of abdominal delivery is that of Laparo-Elytrotomy, which it will be seen by my tabular record has been performed the same number of times, and with the same degree of success as regards the mothers, as Sänger's improved Cæsarean operation. It has this advantage, however, over all other methods, in the fact that the uterus is not cut open, which is an element of very great danger in gastro-hysterotomy, where the muscular activity of the organ has been long kept up. The abdominal surgery of the last decade has certainly established the fact that the opening of the peritoneal cavity is one of the least of the risks to be incurred. And I am satisfied from my own researches that long delay in operating vastly increases the risk of opening the uterus. The application of this method of Professor Thomas is limited, however; and in many of the cases in my record of 138 old Cæsarean operations of the United States, delivery under it would have been quite impracticable, the obstacle having been in the lower segment of the uterus itself. Where the risk in operating has been largely increased by delay and attempts at delivery, it becomes important that wounding of the uterus should be avoided, and as delay is the rule in our country in cases of impracticable pelvic delivery, Laparo-Elytrotomy deserves to be much more thoroughly tested than by a dozen examples in fifteen years. Like all of the methods here enumerated, promptness of action and avoidance of futile intermeddling add materially to the prospect of success. Where there is a putrid fœtus in utero, the choice will lie between uterine exsection after the plan of Porro and Müller, and Laparo-Elytrotomy as successfully performed by Dr. Walter R. Gillette, and shown in Case 8. It would appear to be safer, however, in such cases, to select the Müller operation and get rid of the risk of septic absorption, by the removal of the uterus and its offensive contents at once, as was done with success, after six days of labor, by Dr. Ramello, of Turin, in July, 1880. In Great Britain, where 75 per cent. of *early* Cæsarean operations have been fatal to the mothers, although quite a large proportion of the children have been saved, Laparo-Elytrotomy should be fairly and perseveringly tested in the same class of cases. If women are repeatedly lost, even when but a short time in labor, because of sequelæ traceable directly or indirectly to the uterine wound, then such subjects should be delivered by a method in which this highly sensitive organ is not incised. Cases 6 and 7 of the Laparo-Elytrotomy table were very unfortunately selected for this new form of delivery, and because they were fatal no one appears inclined to make another test in England.

TABLE I.—*Cæsarean Operations by the new*

No.	Date.	Operator.	Locality.	No. of pregnancies	Age	Conj. vera.	Cause of difficulty.	Condition of woman at time of operation.
1	May 25, 1880.	Dr. G. Leopold,	Leipzig,	2-para.	29	2¾ in.	Generally contracted rachitic pelvis: sup. str't cordiform.	Favorable.
2	Sept.11, 1882.	Dr. O. Beumer,	Greifswald,	6-para.	41	Nor'l.	Retro-cervical fibro-myoma.	Unfavorable; high fever.
3	Oct. 6, 1882.	Dr. H. J. Garrigues	New York,	Primipara.	30	5 3/16	Lumbo-dorsal and pelvic kyphosis.	Pulse 124; exhausted by ant. part-hemorrhage
4	Oct. 4, 1883.	Dr. G. Leopold,	Dresden,	Primipara.	23	2¾	Generally contracted flat rachitic pelvis.	Favorable; weak and anæmic.
5	Dec. 26, 1883.	Dr. Chas. Jewett,	Brooklyn,	11-para.	46	Nor'l.	Cancer of cervix uteri.	Pulse 94 to 108.
6	Mar 13, 1884.	Dr. G. Leopold,	Dresden,	2-para.	23	2¾	Generally contracted pelvis.	Favorable.
7	July 17, 1884.	Dr. Oberg,	Hamburg,	Primipara.	37	2¾	Contracted pelvis.	Favorable.
8	Sept.29, 1884.	Dr. Ehrendorfer,	Vienna,	4-para.	29	Nor'l.	Abdominal fibroma.	Unfavorable.
9	Nov. 12, 1884.	Dr. T. M. Drysdale,	Philadelphia	Primipara.	37	Nor'l.	Immovable fibroid of posterior wall of cervix.	Very unfavorable; anæmic; pulse 124.
10	Nov. 16, 1884.	Dr. M. Sänger,	Leipzig,	Primipara.	21	2¾–2¾	Generally contracted and flattened rachitic pelvis.	Favorable.
11	Nov. 28, 1884.	Dr. G. Leopold,	Dresden,	2-para.	26	2¾	Rachitic pelvis.	Unfavorable; pulse 120; feverish.
12	Dec. 5, 1884.	Dr. G. Leopold,	Dresden,	Primipara.	23	?	Great deformity of the pelvis.	Favorable.

Women saved 6, or 50 per cent. Children saved 10, or 83⅓ per cent.

Fatal results have repeatedly followed the Cæsarean operation in Great Britain, where the skill of the operator and the timeliness of the delivery would make us very hopeful if in this country. If then the fatality of the old operation in New York has been the inducing cause of a vital change in the process of delivery, with such a marked improvement in the results,

Sänger Method and its simplifications.

No.	Manner of treating the uterine wound.	Time in labor.	Result to woman.	Result to child.	Cause of death in woman.	Remarks.
1	Serous coat separated; muscular coat resected, 8 deep silver and 12 superficial silk sutures inserted.	About 12 h'rs.	Recovered.	Living.	.....	Child and mother alive in summer of 1884.
2	Same treatment as above; 7 deep sutures and 4 superficial of English fishing gut.	8 or 10 hours.	Died in 40 h'rs.	Living.	Double pyelonephritis.	
3	No resection of muscular coat; 12 deep and 12 superficial silk sutures, with peritoneum turned in.	6 h'rs.	Died in 50 h'rs.	Dead.	Shock and previous loss of blood.	Uterine wound found to have entirely united.
4	Treatment of wound as in cases 1 and 2; 7 deep silver and 14 deep and superficial silk sutures used.	8 h'rs.	Recovered.	Living.	.....	Woman and child alive and well in summer of 1884.
5	No separation of peritoneal or resection of muscular coat; 20 deep and superficial sutures of sublimated silk, with peritoneum turned in.	9 h'rs.	Died in 45 h'rs.	Living.	Peritonitis; erysipelas appeared in the hospital.	Child lived about a year, was not well cared for; uterine wound healed through its entire thickness.
6	Same treatment as in cases 1 and 4; 5 deep silver and 15 deep and superficial silk sutures.	30 h'rs.	Recovered.	Living.	.....	Both alive and well several months later.
7	Serous coat separated; muscular resected; 10 deep sutures of coarse and 17 superficial of finer silk inserted.	?	Recovered.	Twins; one living; one 13½ in. dead.	.....	Slight peritonitis; left phlegmasia dolens of leg; pleuritic effusion; finally reported perfectly well.
8	6 or 7 deep uterine sutures of silk, and between, a large number of superficial ones.	About 2 days.	Died on the 6th day.	Living.	Sanio-purulent peritonitis.	Uterine wound of fundus not united between the sutures; edges breaking down by sloughing.
	Peritoneum drawn over edges of uterine wound and secured by 11 deep and 11 superficial silk sutures.	2 w'ks.	Died in 26 h'rs.	Dead and putrid.	Septicæmia.	Peritoneum united; muscular coat gaping; uterine walls thickened by fibroid degeneration.
10	Serous coat separated; muscular resected; 8 deep silver and 20 superficial silk sutures used.	Some hours.	Recovered.	Living.		
11	Serous coat separated; muscular not resected; deep and superficial sutures of silk used, and the peritoneum turned in.	22 h'rs	Died on 6th day.	Living.	Septic peritonitis.	
12	Serous coat *not* separated, or muscular resected, as in his 1st, 2d, and 3d operations; 6 deep silver, 6 deep silk, and 10 superficial silk sutures, with serous surfaces brought in contact.	16 h'rs.	Recovered.	Living.	.....	In the convalescence a fistula formed, through which in 5 mos. were removed 6 of the uterine wire sutures and 6 silk; the woman entirely recovered her health.

why may not the same be hoped for in London? In New York city and Brooklyn, 9 women and 9 children were lost under 11 Cæsarean operations, and in the balance of the State 7 women and 5 children under 8 operations; a loss in the whole State of $84\frac{4}{19}$ per cent. of the women, and $73\frac{3}{19}$ per cent. of the children, which is greater than the fatality in England.

TABLE II.—*Table of Laparo-*

No.	Date.	Operator.	Locality.	Native of	Age	C. V.	Height.	Cause of difficulty.
1	March, 1870.	Prof. T. G. Thomas,	New York.	Ireland.	40	Nor'l.	.....	Pneumonia for 10 days.
2	Mar. 22, 1874.	Prof. Alex. J. C. Skene,	Brooklyn.	U. States.	?	2¼	.....	Rachitic pelvis.
3	Oct. 29, 1875.	Prof. Alex. J. C. Skene,	Brooklyn.	England.	31	2¾	.....	Rachitic pelvis.
4	June 23, 1877.	Prof. Alex. J. C. Skene,	Brooklyn.	Bohemia.	37	1½	.....	Lordosis and double coxalgic anchylosis.
5	Dec. 3, 1877.	Prof. T. G. Thomas,	New York.	Ireland.	20	2¼	.....	Coxalgic deformity of pelves.
6	July 14, 1878.	Dr. Thomas W. Hime,	Sheffield, E.	England.	37	Nor'l.	.....	Cancer of recto-vag. septum.
7	Nov. 23, 1878.	Dr. Arthur W. Edis,	London, E.	Ireland.	20	2½	.....	Small pelvis; anchylosis of right hip-joint.
8	Nov. 9, 1879.	Dr. Walter R. Gillette,	New York.	Scotland.	23	1¼	4 ft. 4 in.	Deformed pelvis.
9	May 17, 1883.	Drs. Dandridge & Taylor	Cincinnati.	U. States.	32	Bis. soc. 2¾	4 ft. 7 in.	Deformed pelvis.
10	Sept. 1, 1883.	Prof. Chas. Jewett,	Brooklyn.	Ireland.	40	Bis. soc. 2¾	.....	Deformed pelvis.
11	Oct. 4, 1884.	Prof. Alex. J. C. Skene,	Brooklyn.	Scotland.	21	2	.....	Rachitic pelvis.
12	Jan. 26, 1885.	Prof. Chas. Jewett,	Brooklyn.	U. States.	24	?	.....	Lumbar lordosis and dorsal kyphosis.

Women saved 5, or 50 per cent. Children saved 7, or 58½ per cent.

Now mark the contrast: Laparo-Elytrotomy has been performed 9 times in New York and Brooklyn, saving 6 women and 5 children. Four of the six women saved were in labor, respectively, 8, 11, 16, and 22 hours, and the other two, 4 days and a week. Of the eleven Cæsarean patients, 6 were operated upon on the first day of labor, and but one was saved: the prognosis was "unfavorable" in ten of the eleven. In the Laparo-Elytrotomies, four were "favorable" and five "unfavorable" for the operation; all of the favorable cases recovered.

One other form of operation still presents itself for consideration. The Porro-Cæsarean section has its advocates in many lands, and has resulted very differently in different countries. It has been very successful in Austria, and quite the reverse in Germany. As a hospital expedient it stands unrivalled, having completely revolutionized the results in the Maternities of Milan and Vienna. Where the patient has been under treatment in hospital, and is operated upon early, the proportion saved has been very encouraging; but, like the old Cæsarean operation, success greatly depends upon the condition of the patient to be operated upon at the time when the section is commenced. If the woman is exhausted and

Elytrotomies, covering 15 years.

No.	Condition of woman.	Side of incision	Time in labor.	Result to woman.	Result to child.	Injury to bladder.	Remarks.
1	Moribund.	Right.	Not in labor.	Died.	Alive 1 hour.	No.	Operation in interest of child. Woman and child lived an hour.
2	Pulse 130, feeble.	Right.	48 h'rs.	Died.	Dead.	No.	Craniotomy attempted. Woman died of shock and exhaustion in seven hours.
3	Favorable	Right.	11 h'rs.	Recovered.	Lived.	Laceration.	
4	Unfavorable.	Right.	4 days.	Recovered.	Lived.	Laceration.	Child died for want of food and care.
5	Favorable.	Right.	16 h'rs.	Recovered.	Lived 18 days.	Laceration.	
6	Very unfavorable.	Left.	24 h'rs.	Died.	Lived.	No.	Woman a drunkard. 11 weeks in bed; died violently delirious in two hours.
7	Unfavorable, lower extremities œdematous.	Right.	17 h'rs.	Died.	Lived.	Laceration.	Woman died exhausted in 40 hours; no signs of peritonitis.
8	Unfavorable.	Right.	A week.	Recovered.	Dead and putrid.	No.	Forceps, version, perforation, cephalotribe, and craniotclast, all tried.
9	Unfavorable.	Left.	4 days.	Died.	Dead.	No.	Woman died in 44 hours. No evidences of peritonitis found on autopsy.
10	Unfavorable.	Right.	A week.	Died.	Dead.	No.	Woman died in 70 hours of septicæmia.
11	Favorable.	Right.	8 h'rs.	Recovered.	Lived.	Cut by scissors.	Scissor-wound, soon closed spontaneously.
12	Favorable.	Right.	22 h'rs.	Recovered.	Lived.	Laceration.	

feverish, the prognosis will be unfavorable, and still more so if the fœtus has died or been destroyed during the labor. It should always be remembered that the case of a dwarf specially requires an early attention. A careful examination of the valuable tables of Dr. Clement Godson will show the intimate connection that exists between the physical condition of the woman and the final result of her case.

ARTICLE V.

THE CAUSAL RELATION OF OBSTRUCTED CARDIAC CIRCULATION TO LYMPH STASIS. By SAMUEL C. BUSEY, M.D., of Washington, D. C.

IN my former contributions to the medical press,[1] on the congenital and acquired forms of occlusion and dilatation of lymph channels, I collated a number of cases, previously published by different reporters, to illustrate the causes and special characteristics of these forms of disease.

[1] New Orleans Med. and Surg. Jour.; and Congenital Occlusion and Dilatation of Lymph Channels. Wm. Wood & Co., 1878, New York.

In a few of the cases it was evident that the existent lymphangiectasis was attributable to interruption of the blood vascular currents either through the heart or lungs. I referred incidentally to those reports, but the illustrative cases have not, as far as is known to me, been collected and arranged in a manner to distinctly exhibit the relation of cause and effect subsisting between obstructed cardiac circulation and lymphangiectasia.

Before citing the cases relating to the direct proposition, it is necessary to refer to the predicate—that occlusion or stenosis of the thoracic duct, at or near its terminal extremity at the left subclavian vein, may, when the collateral circulation is not speedily and sufficiently established, produce dilatation or rupture of some part of the lymph vascular apparatus. This can be shown both by the results of experimentation and by post-mortem reports.

Morton[1] performed a number of experiments upon dogs by ligating the thoracic duct; in some the "receptaculum and in other the lacteals burst." In every case there was extravasation of chyle. In Sir Astley Cooper's[2] experiments, when rupture occurred it took place at the receptaculum; and Dupuytren's experiments upon horses were followed by nearly similar results. Cooper says it is not necessary to tie the duct. If the animal is fed with milk and the extremity of the duct is compressed one-half hour afterwards, the receptaculum will rupture. Those and similar experiments prove that, under certain conditions involving an interruption or complete arrest of the current of the fluid through the thoracic duct, the resultant distension and dilatation may prove sufficient to produce rupture, which may take place either in the receptaculum or in the lacteals. In those cases where rupture did not take place, the current of the fluid was re-established through anastomosing branches.

The clinical and post-mortem observations are even more conclusive. They connect directly the process of gradual occlusion of the duct by disease with the concurrent development of a diffuse area of lymphangiectasis, which in some cases terminated in rupture and extravasation.

Monro cites the case reported by Morton of "hydrops ascites lactea" in which the rupture of the lacteals was occasioned by the compression of the thoracic duct near the subclavian vein by large indurated tumors.

Morgagni[3] refers to the cases of Valsalva and Santorino, in both of which there was considerable dilatation of the lacteal vessels produced by the pressure of an aneurismal tumor on the thoracic duct. In Valsalva's case the aorta from the heart to the diaphragm was dilated, and "the lacteal vessels presented the appearance of numerous white spots having a diversity of figure and magnitude."

[1] Donald Monro, Essay on Dropsy and its Different Species, pp. 22, 23.
[2] Medical Records and Researches, p. 100 *et seq.*
[3] 17 Epistle, De Sedibus et Causis Morborum, 1761, Lib. ii. p. 152.

In the body of a man who died after a large quantity of chylous liquor had been let out of his thorax, Bassius[1] discovered an orifice at or about the third dorsal vertebra from which the chylous material flowed as from a fountain. Below this orifice the thoracic duct was pervious.

Cayley[2] reports a case of obstructed thoracic duct and rupture of the receptaculum chyli. "On post-mortem examination some yellow fluid was found in the peritoneal cavity, and the peritoneum in front of the spine was bulged forward by the effusion behind it of a large quantity of milk-looking fluid. The receptaculum was much dilated, and on its anterior surface was a perforation two inches in length. The thoracic duct was immensely dilated throughout its course to its junction with the subclavian vein, where it suddenly became narrowed, and just at its mouth a fibrinous vegetation was attached to the lining membrane of the vein which completely occluded the opening of the duct. The narrowed part of the duct was blocked by a firm, yellow cylindrical coagulum."

Virchow[3] refers to the case he observed in a new-born calf, where in consequence of thrombosis of the external jugular vein the mouth of the thoracic duct was occluded, and nearly all the internal organs were dilated to the utmost with ectatic lymph-vessels filled with a slightly sanguinolent fluid. The intestines especially were covered with broad bead-like canals, arranged so closely together that the intervening tissue could scarcely be recognized.

Ormerod[4] reports a case of chylous ascites from which on several different occasions large quantities of a milky fluid were removed. This fluid Drs. Wilks and Marcet proved to be chyle, mixed, more or less, with common serous peritoneal effusion. On post-mortem examination "the left subclavian vein and its afferent vessels were found plugged with a light-colored, ragged clot, evidently of long standing. It was soft in the centre, and at one point was firmly adherent to the walls of the subclavian vein. In the abdomen and chest were also found numerous nodular masses consisting of an imperfectly fibrous structure."

Many other cases might be introduced in which dilatation of the thoracic duct, to a greater or less extent, was the result of partial or complete occlusion near its outlet, caused by the pressure of aneurismal or other tumors, or by disease of the coats of the duct; but such cases have rarely been associated with lymphangiectasia, other than cylindrical dilatation of the duct and enlargement of the receptaculum. In most of such cases the stenotic condition of the duct was compensated by the development of anastomosing branches through which the chyle and lymph channel connection with the venous system was preserved.

[1] Observationum Decade Secundum, Observatio Septima.
[2] Trans. Path. Soc. Lond., vol. xvii. p. 163, 1866.
[3] Virchow, Archiv, vol. vii. p. 130.
[4] Trans. Path. Soc. Lond., vol. xix. p. 199, 1868.

The preceding citations of the experimental and clinical data establish, inferentially if not conclusively, the preliminary proposition, that retardation or arrest of the current of the fluid in the thoracic duct at or near its outlet into the subclavian vein may produce dilatation, distension, and rupture of lymphatic vessels, and consequent effusion of chyle and lymph into the serous cavities. The remoteness of the effects from the obstacle interrupting the current of the fluid may depend upon various concomitant conditions, especially upon the anatomical integrity and the tensibility of the vascular walls. When the impediment to the flow of chyle and lymph occurs at or near its outlet the area of stasis and ectasis would necessarily depend upon the duration and extent of such obstacle; and, hence, when the area of ectasia is extensive the manifest inference is that the cause has been one of gradual development and protracted duration. In the case of Bassius, dilatation and rupture were caused by impermeability of the distal extremity of the duct; in Morton's case the rupture of the lacteals was occasioned by the pressure of a tumor upon the duct near the subclavian vein. In Ormerod's case of chylous ascites the interruption to the flow of the chyle was caused by the "plugging of the left subclavian vein and its affluent branches with a light-colored, ragged clot, evidently of long standing." The resistance to the flow of the contents of the thoracic duct must have been derived exclusively from the interrupted venous blood current. The heart was normal and the duct was unobstructed. In Cayley's case of obstructed thoracic duct and rupture of the receptaculum, two factors were in operation, interrupted blood-current, occasioned by the fibrinous vegetations attached to the intima of the subclavian vein, and the partial obliteration of the lumen of the duct near its terminus. In Virchow's case of the new-born calf, the condition existing partially exemplifies the obstructing forces operating in the cases of Ormerod and Cayley. The mouth of the duct was occluded by a thrombosis of the external jugular. In addition to the slowing of the venous blood-current in the jugular and in the subclavian, produced by the projecting part of the thrombus, the exit of the fluid from the duct was also impeded. The occlusion of the mouth of the duct was probably inconstant and incomplete during life, nevertheless the area of lymphangiectasis was extensive, involving nearly all the internal organs.

The force exerted upon the contents of the thoracic duct by the passing current of the blood in the subclavian vein is nothing more than an illustration of the hydraulic principle of Venturi; that is, if a stream of water is made to flow through a tube, into which another opens and communicates at its distal end with a reservoir of water, a current will be established in the second tube and continue as long as the stream flows through the first tube, or any fluid remains in the reservoir of the second. The anatomical junction of the thoracic duct with the venous system is peculiarly favorable to the maximum development of this principle, for

the near affluence of the internal jugular, and the downward inclination of the duct to the subclavian, contribute to the enhancement of the effect upon the current of chyle. Out of this principle of Venturi must grow the converse, that any retardation of, or obstacle to, the current of blood in the subclavian vein, either from diminution of its lumen or from regurgitant heart affections, must slow the movement of the chyle in the duct and in its tributaries.

The influence of partial obliteration or stenosis of the thoracic duct at or near its termination in the causation of dilatation or rupture of some part of the lymph vascular system cannot be doubted. The evidences of experimentation must be accepted as conclusive. The effects of stenosis produced by the gradual encroachment from disease of the duct or of surrounding and contiguous tissues and structures have been shown by the clinical and *post-mortem* citations. In this latter class of cases the ectasia is gradual in its development and more extensive in its field. In those cases where the lymphangiectasis was consequent upon the slowing or interruption of the venous blood-current in the left subclavian vein, the relation of cause and effect seems equally well established. It remains now to show that such diseases of the heart as slow, impede, or stagnate the venous blood-current in the left subclavian or innominate vein, may also produce lymph-stasis. Petters[1] reports a case of lymphangiectasis in which were found upon the visceral peritoneum "numerous cysts from the size of peas to that of filberts, some colored bright, and containing serum. Upon the small intestines numerous lenticular protuberances, transparent, and filled with wine-yellow fluid. . . The glands of the right inguinal region were transformed into cysts of small walnut size, filled with wine-yellow fluid. From the inner wall of these cysts extended dilated lymph-vessels of crow-quill size, which connected the cysts with each other, so that a dilated vas efferens and afferens could be seen in each cyst. Upon puncture a yellowish fluid spouted from these cysts in a jet of several inches. The lymph-vessels and cysts formed a mass which it was difficult to unravel. The lymph-vessels in the vicinity and the thoracic duct were greatly dilated.

"The heart occupied the entire anterior thoracic cavity. The enormous enlargement of the heart included the entire right side of the organ, so that the left ventricle with the auricle formed only an appendix. The muscular tissue of the left ventricle, which would not contain a hen's egg, was thin and flaccid. The left venous orifice, by the growing together of the apices of the bicuspid valves, was changed into a small crescentic opening, barely admitting the point of the little finger. The latter was callous and inclosing here and there a bony plate. Right ventricle largely dilated, with thinned walls. Columnæ carneæ of both ventricles very

[1] Vierteljahrschrift für die Practische Heilkunde, vol. xiv. p. 141, 1861.

slender and tendinous. Right auricle as large as a child's head, its walls here and there formed of a thin layer of pericardium. Apertures of coronary vein gaping finger wide. Aortic valve competent. Right venous orifice contracted."

This autopsy discloses a stenosis of the left venous orifice, and a moderate contraction of the right ventricular opening. Petters concluded that the stasis of lymph, followed by great dilatation of the lymph-vessels and glands, was caused by the organic disease of the heart. It cannot be doubted that the interruption of the current of blood by the narrowing of the orifices and dilatation of the right side of the heart retarded the movement of the column of fluid in the lymph-vessels. This influence, first demonstrating itself upon the movement of the contents of the thoracic duct, causing distension and dilatation of the trunkal vessels, was transmitted backward, or rather produced stasis of lymph in remote vessels. The lenticular eminences, filled with a transparent fluid, grouped together on the mucous surface of the small intestines, were, probably, ampullar dilatations of terminal lymph-spaces, and the bodies described as cysts on the peritoneum were of like histological nature. Concerning the nature of the gland implication there can be no doubt. The case exemplifies the three varieties of lymphatic telangiectasis made by Lebert, in its lenticular eminences, cyst-like bodies, and transformed glands.

At the conclusion of this report, Petters refers to the case of an old female "suffering with stenosis of the left venous orifices of the heart," upon whose right arm he found several semi-solid tumors, situated immediately under a fatless cutis, which he regarded as dilated lymph-glands.

T. Granger Stewart[1] reports a case of "dilatation of the lacteals," associated with an hypertrophied and fatty heart, with diseased aortic valves and dilated auriculo-ventricular orifices. In this case the stasis of chyle occurred in the intestinal villi, producing dilatation of the central lacteal vessels of the villi, and arresting the further absorption of the chyle. To the incompetency of the aortic and auriculo-ventricular valves was added fatty degeneration of the heart. Here enfeebled action of the organ and regurgitation were co-operating factors in slowing the movement of the chyle.

In Rokitansky's[2] case of chylous ascites, there was dilatation of the heart, "with thickening and shortening of the mitral valves." The cardiac affection not only interrupted the flow of chyle in the thoracic duct, but caused a stasis of chyle in the lacteals and mesenteric glands; of lymph in the subpleural lymphatics; and an effusion of a milk-like fluid into the pleural and peritoneal cavities.

In Hughes's[3] case of abdominal effusion of a chylous fluid, supposed t

[1] Edinburgh Med. Journ., vol. ix. p. 448, 1863.
[2] Path. Anat., Bd. ii. s. 388; also Ziemssen's Cylco., vol. vi. p. 531.
[3] Guy's Hospital Reports, vol. vi. p. 297, 1841.

have resulted from the pressure of mesenteric tumors, "the heart was thin, pale, weak, and flabby," and numerous "lacteals—large, tortuous, varicose, and distended, some with milk and others with a clear fluid"—were observed in all parts of the mesentery. The case was complicated with abdominal tumors, "consisting of several agglomerated mesenteric glands," believed to have been cancerous; but from a number of the enlarged glands "a cream-like fluid exuded," and hence it is not improbable that the morbid condition of the glands and lacteals was due to stasis of chyle and lymph, caused by the disease of the heart.

In this connection the case of mitral and tricuspid insufficiency, with granular liver, ascites, anasarca, and thrombosis, reported by Oppolzer,[1] is interesting. The inferior and superior venæ cavæ were occupied at their outlets with pale, yellow, soft coagula. From the superior, the clot extended with a jagged end into the auricle, and continued into the right subclavian, as well as into the right internal jugular as far as the foramen lacerum. The left innominate and the terminus of the left subclavian were obliterated. The thoracic duct was plugged at its termination by a pale-red, fibrous coagulum. Its walls were thickened, and its lumen, from the receptaculum to the occluding thrombus, was greatly dilated. The regurgitation of blood into the thoracic duct was caused by the obstruction to its entrance into the heart.

There is another class of cases of lymphangiectasis associated with symptoms of cardiac disease, but the direct connection of the lymph-stasis with an affection of the heart was not proven by a *post-mortem* examination. The following, reported by Cholmeley,[2] is an example of this class:—

This was a case of great enlargement of the right lower extremity, with an intermitting flow of a milky fluid from behind the ankle. The lymphatic engorgement began at the age of three years, and continuously increased during the succeeding six years, when it had involved the whole leg up to the groin. "The pulse was normal as to frequency and rhythm, and of fair volume and force; but all over the heart there was a soft, blowing, systolic murmur, which was loudest at the junction of the second left costal cartilage with the sternum."

The child was "short, stout, and generally healthy-looking, with a good bright-red color in the cheeks and lips, but was easily affected by cold, and then complained of a want of breath and a feeling of tightness in the chest; and at such times the complexion assumed a markedly livid tint; respiration became somewhat labored and noisy, the extremities cold, and the nails dark-blue."

The clinical history does not, in the absence of a *post-mortem* examination, positively establish any connection between the lymph-stasis which

[1] Allgemeine Wiener Medicinisch. Zeitung, p. 149, 1861.
[2] Trans. Clin. Soc, Lond., vol. ii. p. 116, 1869.

first appeared near the ankle, and the disturbed cardiac circulation; but such an hypothesis cannot be excluded. The remoteness and limitation of the area of lymphatic engorgement cannot be accepted as negative conditions disproving it. Retardation of the venous current near the heart, and consequent repletion and distension of the thoracic duct and receptaculum, would assuredly offer resistance to the movement of the lymph in affluent vessels. The assumption that the engorgement could have been due to devastated inguinal glands, or occluded lymph-vessels in the abdominal cavity, is discredited by the appearance of the intumescence first about the ankle, and its gradual and continuous extension upward; whereas, if either of those conditions had existed, the lymph-stasis would have begun at the locality of such obstruction and extended in the reverse direction. Lymphatic engorgement does not follow the law of symmetry, and its limitation to one lower extremity may be ascribed to any one or more of the variety of circumstances, such as the varying tensibility, location, distribution, or the anastomosing connections of the lymph vascular system of the lower extremities.

The explanation of this relation of cause and effect between cardiac disturbances and lymph-stasis must, in a general way, be sought in the varying conditions of blood-pressure. A potential, if not the predominant factor concerned in the locomotion of the lymph is the difference between the arterial and venous blood-pressure; the greater this difference the more rapid the movement of the lymph. In a normal condition of the heart, venous orifices, and great afferent and efferent vessels, the blood-pressure in the innominate veins and their affluent branches, during diastole, is at its minimum—represented in comparison with the pressure at the aortic summit, as *nil*; so that, whatever may be the potentiality of the difference between the arterial and venous blood-pressure as a force in promoting the locomotion of the chyle and lymph, it is at its maximum when the venous blood-current is flowing most easily and rapidly into the right auricle. Therefore, it must follow that any disease of the heart, or any condition of its affluent veins which retards, impedes, or obstructs the free and rapid flow of the venous blood into the right auricle and through the tricuspid orifice, will slacken, interrupt, and obstruct the movement of the chyle and lymph in the thoracic duct and its tributary vessels. This conclusion is not derived merely through inductive reasoning, but is illustrated and verified by clinical observation and post-mortem appearances.

The chief function (Küss) of the right auricle is to facilitate the flow of the venous blood by allowing itself to be filled, thereby lessening the blood-pressure in the affluent veins. During its contraction reflux is prevented by the fulness of the veins and by the elasticity of the ventricular walls. If these functions are disturbed and changed by disease of the walls of these cavities, reflux may take place, with increased blood-pressure in the

affluent veins, lessening of difference between the arterial and venous blood-pressure, and consequent slowing of the lymphatic current.

If, as claimed by some, the circulation of the lymph is due mainly to transudation and endosmosis taking place at the periphery, increased pressure in the venous system would be equally, if not more effective in the causation of disturbances of the intermediate plasmatic circulation. The inquiry is not, however, into the causes of lymph-stasis and ectasis, but relates to the influence of cardiac disease in the production of these affections of the lymphatic system.

In conclusion I append the following quotations:—

"Obstructive engorgement of the great veins extends also to the thoracic duct. When the subclavian vein is filled to distension, the flow of chyle and lymph must encounter a resistance equal to that opposed to the current of any other vessel which empties into the subclavian. Nay, if lymph be the source of the fibrin in the blood, we see, upon simple physical grounds, why the blood of emphysematous patients is poor in fibrin, why the venous crasis presents hyperinosis and increase of fibrin. Restricted afflux of chyle must, moreover, prejudice nutrition both of the blood and of the entire organism. It is one of several causes which contribute to the general emaciation and to the premature marasmus of emphysematous persons; perhaps, too, it may account for the lack of albumen in the serum of the blood, which produces a tendency to the establishment of dropsical symptoms."[1]

"The inadequate emptying of the thoracic duct into the left subclavian vein, over-distended with blood, will, in cases of pulmonary emphysema, lead to impoverishment of the blood in so far as concerns such elements as are derived from the lymph, the colorless blood-corpuscles, fibrin, and albumen."[2]

ARTICLE VI.

ON THE USE OF STRYCHNIA IN NERVOUS DISEASE. By LANDON CARTER GRAY, M.D., of Brooklyn, New York.

IN 1880 Dr. J. S. Jewell,[3] in the course of a debate upon a case that had been narrated by Dr. S. G. Webber, advocated the use of large doses of strychnia, in some cases as much as one-tenth of a grain, in cases of myelitis, commencing as soon as the febrile symptoms had subsided. At the time it seemed to me that the proof was lacking to show the relationship between the improvement and the drug. In a myelitis of the anterior horns (poliomyelitis anterior) or a progressive muscular atrophy the progress of the disease can be foreseen with considerable accuracy, although in the former malady it is not always easy to do this during the first week or even during the first month in some few very subacute cases; and the prognosis is still

[1] Niemeyer, Text-Book of Practical Medicine, vol. i. p. 120.
[2] Hertz, Ziemssen's Cyclop., vol. v. p. 382.
[3] Journ. Nerv. and Ment. Dis., July, 1879.

more assured in that myelitis of the columns of Burdach which we call locomotor ataxia, or in that other affection of the lateral pyramidal column known as lateral sclerosis. Outside of these forms, however, our differentiation of disease lacks precision. The embryological researches of Flechsig, the physiological experiments of Woroschiloff and others, and the fragmentary pathological observations of many, have mapped out other columns in the spinal cord that are probably distinct in their functions, and, therefore, probably distinct in their diseases. There are, for example, the anterior pyramidal columns, the anterior fundamental columns, the lateral columns *proper*, the direct cerebellar columns, the columns of Goll, each of which, according to the pathological knowledge that we have already obtained of the other strands just named, are probably subject to individual disease. Our neurological nomenclature indicates our pathological ignorance in this respect. Any myelitis that is not of the anterior horn, or of the column of Burdach, or of the lateral pyramidal column, is called, in general terms, simply a myelitis; and yet two succeeding cases may be as anatomically distinct as is disease of the anterior horn from disease of the column of Burdach—or, to use simpler and better known terms, as is an essential infantile paralysis from a locomotor ataxia.

These distinctions, it seemed to me at the time of the discussion, and it seems to me still, Dr. Jewell overlooked. But further conversation with Dr. Jewell in after years, and his persistent and earnest belief in the correctness of his views, arrested my attention, so that for several years I have endeavored to verify his observations. I have prescribed strychnia accordingly in many cases of myelitis. In the really acute cases, however, when the onset of the symptoms has been sudden and grave, I have only made some two trials. In these the drug was so badly borne, quickly producing distinct dyspnœa or some exaltation of muscular reflex action which I feared to prolong, that I did not feel warranted in continuing what must be still regarded as an untried method of treatment.

Except in these grave acute cases, febrile symptoms are so much the exception that the rule as to waiting for the subsidence of them will not hold. When the symptoms are subacute, reaching their acme in five to ten days, fever is lacking, unless the patient be a child. In two cases, for example, of myelitis of the anterior horns, I had begun the administration of the drug in doses of $\frac{1}{60}$ to $\frac{1}{40}$ grain, three times daily, but in one the supervention of a distressing dyspnœa, in the other a quickly ensuing cephalalgia and feeling of fulness about the head, made me abandon it. These cases, given in more detail, were as follows:—

CASE I.—C. G., aged 45, robust, vigorous business man, who had been at the head of a large and harassing business for several years. A hard worker, and had for several months past felt himself overworked. Subacute onset of disease. Weary feeling one day in the legs, next day tingling, numb feeling in the fingers and increase of weariness in the legs; on

third day legs failed him so that he walked with effort. On third day I saw him. He had distinct motor weakness of lower and upper extremities, slight impairment in the perception of tactile and painful impressions, and slight impairment of response in extremities to faradic and galvanic stimulus, but the polar reactions were not altered. I may say that the electrical alterations were so slight that I had a doubt as to whether they were not within physiological limits. Tendon reflex *nil*. The bladder and the rectum were not affected. *Diagnosis of Poliomyelitis Anterior.* —I immediately put the patient to bed, kept him there for ten days, put him on his feet gradually, administered the iodide of potash, ergot, galvanism, etc., and he made an excellent recovery in some five weeks. It was about the fifth day that I first administered the strychnia, and again about the third week. Each time it produced the same unpleasant dyspnœa.

CASE II.—J. L., 38, a comparatively young man, of excellent health, excellent habits, except that he smoked to excess, who was retiring from business with a competence after twenty years of hard work; he had not, however, felt himself overworked. The onset of the symptoms extended over some six days, at the end of which time he walked with effort, and complained of slight subjective disæsthesiæ in upper and lower extremities. Slight diminution in response of nerves to faradism and galvanism. No polar changes. Sensations of touch and pain very slightly impaired, distinct motor weakness of lower extremities, no electrical alterations. Bladder and rectum unaffected. No tendon reflex. Diagnosis of poliomyelitis anterior. Patient made a good recovery in the course of a month. Strychnia administered about fourteenth day.

CASE III.—In the case of a girl, aged 18, in whom there suddenly supervened a myelitis, affecting the cord from the lumbar enlargement to the cervical enlargement, with early implication of the lateral pyramidal columns. The administration of strychnia, gr. $\frac{1}{60}$, was begun about six months after the onset of the disease. This was on December 20; on the 30th the dose was increased to $\frac{1}{40}$; on January 2, to $\frac{1}{30}$; on the 7th, to $\frac{1}{30}$. On the 11th, after taking the morning dose, there suddenly ensued a violent attack of muscular spasm, affecting the trunk and extremities, so that patient became seriously cyanosed. The attack lasted about an hour, and passed off under the administration of ether by inhalation; but for several days afterward any distinct sound or noise caused spasm.

In some more chronic forms of myelitis, however, I met with more success.

CASE IV.—G. B., 40, butcher. Patient was on board the steamboat "Seawanhaka," that took fire in the Long Island Sound several years ago, and burnt to the water's edge, with a frightful loss of life. Jumping into the water at the cry of "fire," he was struck by the paddle-wheel and rendered unconscious, but was saved. On regaining his consciousness, he found that his lower extremities were paralyzed. Some five years after this he came to St. Mary's Hospital, August 15, 1885. Unable to stand; great motor weakness of lower extremities and paresis of upper; muscles atrophied; marked impairment of faradic response, also of galvanic, and the negative opening contraction obtained with a much weaker current than should be the case; partial paralysis of rectum; tactile and painful sensations much delayed and impaired; no tendon reflexes; never

had any cincture feelings; slight cephalalgia and amblyopia. General health greatly impaired; has lost some twenty pounds in weight; is anæmic; suffers much from insomnia. Ergot ext. fid. ʒj ter in die ordered; also, galvanism.

Aug. 26. No improvement.

Sept. 1. Vesical paralysis has slightly increased. Belladonna ordered; ergot discontinued.

10*th*. Increase of rectal weakness, so that he cannot retain feces.

21*st*. No better.

Oct. 17.—No improvement. Strychniæ sulph. gr. $\frac{1}{60}$ ordered three times daily, which was gradually increased to gr. $\frac{1}{40}$ by the 25th.

Nov. 6.—Doing well; can walk about the ward with the aid of a cane in each hand. On the 18th dose increased to gr. $\frac{1}{30}$. 25th, has so improved that he uses only one cane.

Dec. 12.—Walks without any cane, but with great caution.

This improvement continued until he could walk so that only a slight lingering in his gait was noticeable; bladder and rectal trouble almost disappearing. Thinks himself well. On Feb. 9th of this year he was discharged thus benefited, at his own request, since which time I have not heard from him.

CASE V.—K. D., aged 30. Onset shortly after a miscarriage, extending over several weeks, eventuating in complete motor and sensory paralysis of upper and lower extremities, trunk and neck muscles, urinary incontinence, and paresis of sphincter ani. Reaction of degeneration. Tendon-reflex *nil*. She was admitted to St. Mary's Hospital Sept. 4, 1885, having been totally paralyzed some three weeks before admission. Until Oct. 5, *i. e.*, 31 days, she was treated by ergot, ʒiss doses of the fluid extract (Squibb) ter in die, but the symptoms remained stationary. At this date the use of strychnia was begun, in gr. $\frac{1}{40}$ doses, increased by the 28th to gr. $\frac{1}{30}$. Improvement at the latter date was marked, patient being able to move leg slightly, whilst hitherto she had scarcely moved the toes.

Nov. 15.—Dose increased to gr. $\frac{1}{30}$; Dec. 15, to gr. $\frac{1}{20}$, during which lapse of time patient steadily improved until Jan. 10. She was able to get out of bed and sit in a chair. Shortly afterward there were slight symptoms of strychnia poisoning, and the dosage was temporarily reduced to gr. $\frac{1}{30}$. Beyond this point she did not make any essential improvement. Slight feeble movements of the hands and feet, moderate finger and toe movements, sufficient return of strength in the neck and trunk muscles to hold the head and body erect in a chair, not able to walk, this was the uttermost that was reached. After a month's further trial of the strychnia, therefore, it was discontinued, since which time the patient has remained in an almost stationary condition.

In five cases of progressive muscular atrophy I have given strychnia in doses up to gr. $\frac{1}{25}$. In all of them it acted as a remarkable stimulant, inducing such a sense of well-being that most of them have greatly felt the need of it when it was discontinued, so that several take it continuously. In one very marked and typical case $\frac{1}{30}$ to $\frac{1}{25}$ of a grain has been taken daily three times for nearly two years. In none, however, was there any real improvement. Dr. S. Weir Mitchell, in his work on the treatment

of neurasthenia by rest and forced feeding, recommends strychnia in doses of gr. $\frac{1}{30}$ at the time when patients are to be taken out of bed. I have pursued this plan in a number of such cases, and have satisfied myself that it is invaluable. But, singular to say, three cases of neurasthenia, which were treated in the general way, bore strychnia in gr. $\frac{1}{30}$ doses badly, severe toxic symptoms being induced in two.

I have, however, never felt myself warranted in giving such doses as Dr. Jewell has given. I have never felt it safe to exceed gr. $\frac{1}{30}$. Indeed, even when giving $\frac{1}{50}$ or $\frac{1}{40}$ of grain, I have always been on my guard, because I have on several occasions found the action of the medicine to be cumulative. It was notably so in the case of transverse myelitis with contracture. Nor have I ever been able to dispossess myself of scepticism as to the benefit to be obtained from a toxic dose, which may possibly vary in amount with each individual and each disease; and I have therefore refrained from increasing the dose beyond the first toxic symptoms.

These cases are too few in number, of course, to warrant any conclusions. As far as they go, they demonstrate that strychnia was not well borne by two cases of severe acute myelitis, or by two subacute cases of mild poliomyelitis anterior; that gr. $\frac{1}{25}$, continued for four days in a case of transverse myelitis with early extension to the lateral columns, given three months after onset, suddenly induced alarming toxic symptoms; that one chronic case of general myelitis of traumatic origin was greatly benefited, as was also a case of general myelitis in which the onset had been gradual; that in five cases of progressive muscular atrophy it acted as a remarkable stimulant; that, as Dr. Weir Mitchell has indicated, it was decidedly beneficial in cases of neurasthenia, which, after being treated by some eight to ten weeks of rest and forced feeding, were taken out of bed, although it failed to agree with three cases of neurasthenia treated in the ordinary way. For these reasons I intend this paper merely as a memorandum upon the subject, which I certainly think is worthy of further attention.

In conclusion, I desire to say that I have been at some pains to examine the physiologically experimental knowledge which we have of this drug, and I have been unable to obtain therefrom any indications as to its employment in this particular therapeutic direction.

ARTICLE VII.

THE PREDISPOSING CAUSES OF ANEURISM. A STATISTICAL INQUIRY.

By JOHN B. HAMILTON, M.D., Supervising Surgeon-General of the U. S. Marine Hospital Service, Prof. of Surgery in University of Georgetown, D. C.

I HAD been of opinion for some years that diseases of the heart and circulatory organs in seamen have, for their greatest predisposing cause, the combined effect of heat and moisture while engaged in exhausting occupation, together it might be with rapid diurnal change of temperature. To establish, if possible, the fact, I commenced the inquiry, the result of which not only modified that opinion, but seemed to overthrow many others strenuously urged by writers upon the subject. If, in the remarks which follow, it is noticed that positive deductions proving the real causes of the disease are wanting, it does not prove that they are valueless, for the upsetting of a false doctrine is only less valuable than the establishment of a truth.

When one turns to the text-books the great discrepancy of opinion therein is itself evidence that the truth, if known, has not made any great headway. Thus Chelius: "Aneurisms arise either of their own accord or after determinate external influence." He mentions rheumatism, gout, scrofula, syphilis, mercury, and chronic alcoholism as "internal causes," and "wounds, violent efforts in lifting weights, in jumping, coughing, and the like," as "external causes." Richerand stated that he observed that the attendants of the surgical amphitheatre were peculiarly liable to aneurism, and he attributed it to the potations of alcohol which they drank, together with the exertion of carrying in the bodies to the amphitheatre. Guthrie gives muscular exertion as the greatest predisposing cause. Erichsen gives age, climate, and cachexia, and under the head of climate repeats the statement of the older writers that the disease is "far more frequent in cold than in hot countries." But in his judgment the habits of the people regulate its prevalence. In regard to cachexia, while mentioning the general opinion that syphilis predisposes to the disease, he does not think that there are statistics to warrant the conclusion. Phthisis, he asserts, is antagonistic to aneurism.

Sir George Ballingall states, in regard to syphilis as a causative agent, and as to the occupation of the soldier:—

"I may here mention a singular opinion of Baron Larrey as to the cause of some aneurisms, which he distinctly ascribes to a syphilitic virus giving rise to ulceration of the internal coat of the artery; and he narrates some cases in which the exhibition of mercury is said to have been followed by a diminution of the dilatation of the artery. Larrey's observations coincide with those of Scarpa and Sabbatier as to the formation and increase of the tumor, and his experience, I find, coincides with my own as to the infrequency of aneurism in what may be termed its spontaneous or idiopathic form amongst soldiers." (*Outlines of Military Surgery*, Edinburgh, 1852.)

Mr. Holmes, in his System of Surgery, thinks the assertion that syphilis and mercury predispose to aneurism is gratuitous. Alcoholism, he thinks, is an important factor, but he avoids the main issue by stating that in "general terms" . . . "anything may be a cause of aneurism which destroys the balance that ought to exist between the expansive force of the circulation and the reaction of the wall of the artery, so as to make the former preponderate." He, however, in *Quain's Dictionary*, states that it is very probable that chronic alcoholism has an influence in the causation of aneurism.

Prof. S. D. Gross says—

"Of the causes which induce spontaneous aneurism more frequently in one artery than in another, nothing definite is ascertained. Several circumstances, however, may be assigned as affording at least a plausible explanation. How far any one of these causes alone is capable of producing aneurism is altogether a matter of conjecture."

He observed its frequency in the southwestern region of the United States. He recognized the great prevalence of the disease among sailors, but thinks soldiers less frequently affected than common report gives credence for. Mercury and syphilis, "and the inordinate use of spirits are supposed to predispose to the formation of aneurism, but how far, or in what degree, remains to be demonstrated."—(*System of Surgery*, 6th edition, vol. i. p. 690 *et seq.*)

Prof. D. Hayes Agnew (*Princ. and Prac. Surgery*, vol. i. p. 545) does not

"believe that occupation—that is, the ordinary employment performed by the working population—can be placed among the predisposing causes of aneurism. There is nothing in honest labor to produce arterial degeneration. . . . The doctrine that constitutional syphilis is a fruitful source of aneurism, and especially the intra-thoracic form of the disease, has for some time been gaining strength, and may be said at present to be deeply rooted in the medical mind. Our knowledge of the relation between syphilitic poison and arterial degeneration is entirely too meagre to warrant any hasty generalizations on this point. . . . If aneurism is so commonly the sequence of a syphilitic diathesis, how shall we explain the infrequency of the former disease in females, who furnish so many examples of the latter affection? During an experience of twelve years in the Philadelphia Hospital, an institution which is exceptionally rich in syphilitic disease, I never witnessed a single case of aneurism among the inmates of the venereal department."

Billroth states that, although atheroma is "a very frequent disease of old age, and occurs everywhere, aneurism is by no means confined to old persons. In Zurich, where atheroma is common, aneurism of the extremities is rare." He mentions the curious distribution of the disease over Europe, and says that—

"Special causes are little known; popliteal aneurism is most frequent among aneurisms of the extremities; the explanation has been sought in the superficial position of the popliteal artery, in the tension to which it is subjected on sudden movements, contusions, etc. Thus this form is said to occur especially often in England, in footmen who stand behind the carriages, but I must acknowledge that to me this seems improbable as the explanation given for chambermaid's knee. I am inclined to believe that the tendency to diseases of the artery, as to gout, is due to hereditary influence."

Dr. Myers thinks the prevalence of aneurism among British soldiers is primarily due to tight clothing. (London *Lancet*, Feb. 20, 1869.) Surgeon Major Robinson (*Ibid.* March 30, 1869) is of opinion that the stock and collar of the soldier have a great deal to do with it. Surgeon Henry Muscroft, while agreeing with both the foregoing surgeons that aneurism is more prevalent in the British army than in civil life, urges against Dr. Myers' statement that tight clothing is an important factor in its causation, that females, notably exempt, wore tight corsets continually; and Staff Surgeon Gore states (*Ibid.* p. 625, May, 1869) that aneurism is as prevalent at Honduras as at Good Hope, and that the West India regiments wear no collar and very loose clothing, owing to the climate, and the mortality from aneurism is 2.24. This point seems to have been overlooked by Mr. Barwell (*International Encyclopædia of Surgery*, vol. iii. p. 379), who thinks that Mr. Myers has conclusively proven that the prevalence of aneurism in the British army is "due to over-tight uniforms, especially the stock." Mr. Barwell, like many other recent writers, takes issue with Aitken and those claiming syphilis to be an especial factor in the production of aneurism, and says the burden of proof, which must rest on the affirmative, is entirely wanting. He thinks rheumatism and alcoholism are positive factors.

In a little pamphlet without date, published presumably during the time of the French Directory, by the Citizen Sarazin, Chirurgeon, entitled *Instructions on the General Causes of Aneurism*, which may be found in the library of the Surgeon-General of the Army, it is stated that among the classes of food which are the most pernicious of all, and which contribute more to the destruction of the arterial coats than any others, are the acid unripe fruits, and the immoderate use of wine. Bad hygiene, especially of prisons, and the air in the vicinity of latrines, are stated by this author to be frequent causes. He also lays stress on climatic influences, and stated that in his opinion this is the principal and most ordinary cause of aneurism. He enunciates the truth, which modern statistics bear out, that this disease is ordinarily seen in those places where the atmosphere is usually humid, and of a high temperature. Also—

"The people who live in the valleys of the South, those whose constitution is feeble and delicate. The humidity of the air, with violent heat, produces a constant impression on the body to relax the vessels already enfeebled, and the same causes which produce other dangerous maladies produce this. Familiar experience proves that heat diminishes the action of all the solids of animal life, it evaporates the liquids considerably, relaxes the bloodvessels, and increases their capacity, and it is only with cold weather that they are again given their tone. If a capillary is examined under the microscope while the animal is living, and then a certain degree of heat is presented, it will be seen that this heat considerably distends the arteries and the veins, and when cold is applied they then contract. The habitual use of non-nutritious diet during the time when the body is growing, also aids in the formation of aneurism. The first years of life, when

the solid parts of the body are elastic, soft, and very dilatable, is that which requires more food to enable the body to sustain the force of this fatigue. It is proved by the narratives of travellers, and by the observation of naturalists, that the use of meat gives to man a very remarkable vigor, and renders the circulation more active. Aneurisms, therefore, often depend upon the force of the great vessels of the heart, the principal agent in the progressive movement continually made by the fluid blood. He observes that in London, one of the largest seaports, the men drink much wine, and therefore their bloodvessels on the surface of the body are often varicose, and excessively dilated. They are subject to frequent hemorrhages, and very great mortality. These accidents are common to the people of the North, to whom spirituous drinks are indispensable, by reason of the rigor of their cold climate. It is particularly in those icy climates where liquor is drank with the most impunity, because the bloodvessels are unnaturally compressed through the effect of the cold."

The Citizen Sarazin was thus far in advance of his predecessors and contemporaries. Indeed, we may say, he was a century in advance of his time; and, with certain exceptions to be hereafter noted, it will be seen that the statements are very nearly correct.

An examination of the writings of the fathers of medicine concerning the cause of aneurism does not reveal any profound knowledge of the subject or show that they probed beyond the general exciting causes which produced them. Galen says:—

"It happens in consequence of the skin in the neighborhood of a wounded artery cicatrizing, whilst an ulcer remains in the vessel, which neither becomes agglutinated nor cicatrized nor filled up with flesh." Aëtius is of opinion that it occurs most frequently in women "during parturition, on account of the forcible detention of the spirits." Fernelius has no positive opinion, but evidently differs from Galen when he says: "It is scarcely credible that some imagine that in these affections the vein or artery is ruptured or opened; for if the blood has escaped from the vein or artery, it would soon putrefy, and give rise to tumor of a different kind." Gorræus is not much more satisfactory in leading us to suppose that he knew much of anything about the subject of aneurism, although he arrives at the general conclusion that it is due either to a "powerful compression or an increased movement of the spirit, in consequence of which the vessels being distended give way; or from the vessel being divided with the superficial skin, whether accidentally or by the unskilfulness of a surgeon in bloodletting when he punctures an artery instead of a vein."

Ambroise Paré, in reviewing the works of his predecessors, takes a further stride in discussing the causation of aneurism, and writes: "It may also be occasioned" (he adds to Galen's causes) "by the wound of an artery, the superjacent skin closing and cicatrizing, whilst the wound in the vessel remains without being agglutinated, blocked up, or closed by flesh. Aneurisms may thus be occasioned by anastomosis, diapedesis, rupture, erosion, and wound." Jacques Guillemeau, following the opinion of the ancients, says that "an aneurism is occasioned when the blood and

spirits pass out of the vessels, in consequence of their orifices being opened, which is said to be by anastomosis; or when the coats of the artery are divided or ruptured, either from a wound or any other cause." Sennertus, after examining the doctrines of the older writers, concludes that "the approximate cause of an aneurism is an opening in the internal tunic and a dilatation of the external one." Fabricius informs us that "whatever kind of aneurism may follow a wound, either none of the coats, or, at most, the internal one only, is opened, the external one always uniting."

Robert Wiseman, the "Father of English Surgery," divided the causes of aneurism into internal and external: the former cause is from the "impetuosity of the blood, which, moving with greater violence in its channels than the artery can sustain, doth force its way through the side of the vessel, and, bursting a hole in it, doth issue into the space that lieth between it and the neighboring muscles and framing itself a nest." He also thought that the character of the blood, "being too sharp or thin, erodes the vessel; or, being highly fermented by other causes, bursts through all."

Lancisi was a little more explicit in his theory of the causation, but had not divested himself of the old theory of "humors and spirits." In his inquiry into the proximate or internal causes he found "no less than three which may either act singly or together. The first appears to be the concurrence of two blows in opposite directions, acting at the same moment on the same part of the artery. The second is the natural weakness of the arteries. The third is the existence of morbid humors in the body of the person struck."

As far as I can learn he is the first person who makes mention of syphilis as the cause, although he quotes Severinus in his treatise "De Novissima Observatione Abscessüs" that aneurisms arise from syphilitic cachexia. Lancisi finally concludes with the assertion that "aneurisms do not arise from paralysis of the fibres covering the coats of an artery."

Alexander Monro, writing in 1733 on the subject of aneurisms, says: "The preceding account of the coats of arteries may let us see that no aneurism can happen unless through some fault of the interior coats," and in a list of the causes he gets no farther than "wounds, bruises, straining, loud laughing, crying," etc. Petit, his French contemporary, has no opinion to offer upon the causation of aneurism, except to say that "when a certain portion of an artery has lost its elasticity it becomes less capable of resisting the impulse of the blood." Haller concludes that it is not "at all improbable that the aneurism has arisen from a large number of osseous scales which did not admit of dilatation, and which were formed of the concretion of a yellow humor." William Hunter in his remarks on aneurism does not discuss the question of causation. Donald Monro, physician to St. George's Hospital, London, in his observations on aneurisms, confesses his ignorance of the causes of aneurism. He says:—

"The greater part of the true aneurisms we have any account of came of themselves, and no cause could be assigned for their origin. Strainings of the body, and increased momentum of the blood and a stop put to its free circulation through some of the large vessels, has been alleged to give rise to several. . . . . Sometimes a scorbutic or venereal taint, or some other acrimony in the blood, has been accused; at other times particular obstructions or disease of the arteries, at the part where they were dilated, have been said to occasion them. And certainly there must either be a particular disposition of the blood, which renders it capable of softening or relaxing the arterial fibres, or some disorder in the fibres or vessels affected, or a particular quality in the fluids thrown upon such parts before an aneurism can be produced."

But further examination of the writings of our predecessors will be of no avail in the prosecution of this inquiry, and I may close this review by quoting the words of Lancisi, who had himself traversed the ground: "As far as I have been able to ascertain," he says, "a profound silence has been maintained by these very writers concerning those aneurisms of the heart, and of the larger vessels, which have been noticed by more modern surgeons and physicians in their frequent dissections." If we could communicate with Lancisi, we might tell him that, for one hundred years after he wrote these words, the "profound silence" which he bewails was strictly maintained by his successors, as Sarazin's article seems to have attracted little or no attention.

Alcoholism.—All recent writers singularly enough seem agreed that alcoholism, or the inordinate use of intoxicating liquor, is an undoubted predisposing cause of aneurism, but no statistics are brought forward to support the hypothesis. On the contrary, the general statement is made that the disease is most prevalent in England and Ireland, where the abuse of alcoholic drinks prevails; but Sweden and Norway, as will be shown, as well as Germany, are comparatively exempt—and the Germans and Swedes are, to say the least, not famous for sobriety. And the following letter from the superintendents of the three leading inebriates' homes in this country would seem to indicate, if any affirmative proposition can be proved by a negative, that the contrary is the fact:—

Dr. J. A. Blanchard, of The Inebriates' Home, Fort Hamilton, writes me that—

"We have never had a death from aneurism in this institution, nor any pronounced case of the same during the time I have been in charge, nor, as far as I can ascertain, previous to this."

Dr. Blanchard's statement is also corroborated by Dr. Crothers, the superintendent of Walnut Hill Lodge Inebriate Asylum, as follows:—

"I have never met a case of aneurism among the inebriates under my care. In the records of 700 cases which I have made, no cases of this kind have been noted. The statement you mention has grown probably from a fact published some years ago in London, that the stevedores or porters on the docks who drank to excess both beer and spirits, and lifted heavily, were found to have aortic aneurisms. In some German work on pathology, a statement has been made that the arch of the aorta was

always found dilated in persons who used spirits. I regret that I have not noted the authority of these statements, not considering them of importance. Theoretically, alcohol could not be the principal cause of aneurism, for the reason that other parts of the body would undergo degenerative changes, and death, long before this condition, would occur. When it appears in alcoholic cases, it must of necessity be due to *other causes largely.*"

The letter of Dr. Day, of the Washingtonian Home, Boston, is of the same tenor:—

"In the last twenty-seven years I have treated a little over *ten thousand* inebriates, and amongst all of these cases I have not in a single instance seen an *aneurism* of the *aorta;* and, indeed, I have not seen anything like aneurism, except sometimes an enlargement of the veins of the lower limbs."

Climate.—In regard to climate, I find that the generally expressed opinion that the disease is more common in northern climates is incorrect. Countries in the extreme north are notably free from aneurism.

The most striking feature of the climatic statistics is the large proportion of deaths from aneurism in the State of California. The Census Reports for 1880 show 64 deaths from aneurism in a total mortality of 11,530, representing a rate per thousand of 5,550, the largest of any in the United States. The Health Reports of San Francisco for three years, 1876, 1877, and 1883, show 130 deaths from aneurism in a total mortality of 16,827 from all causes, a rate per thousand of 7.72. In estimating the reasons for this disparity, which operates against California, it must be remembered that the population of California is made up principally of persons who have emigrated thither from different States of the Union and Europe. The census of 1870 shows that of 560,247 inhabitants, 350,416 were of native, and 209,831 of foreign, birth. Less than half of the native population at that period were born in California, and nearly all the remainder were immigrants from the New England and Middle States. Of the foreign born, 54,421 were from Ireland, 48,826 from China, 29,701 from Germany, 17,669 from England, and 10,660 from British America. It will be noted that the large proportion of these immigrants were natives of northern countries, whose climate is entirely different from that of California. The mean temperature of California is about 60°, from which point it does not vary much during the four seasons of the year, and it will be apparent that persons coming from cold climates to this mild, languid temperature, and retaining their habits of life and living under the new conditions, would become subject to those diseases of the circulatory organs which are affected by temperature. The necessities of life being cheap in California, meat especially so, and the people living on stimulating foods and native wines, which are to be obtained cheaply, are known to be prone to excesses in diet and over-

stimulation. Add to this the excitement following the opening of a new country, where the precious metals until lately formed the stimulus to exciting labor, we may see some of the prominent causes which have made aneurism such an important factor in the death-rate of California.

Dr. Hayne, of San Francisco, who has studied the predisposing causes of the prevalence of aneurism in California, says (*Pacific Medical Journal*, vol. vi. p. 117) that the nature of the climate, and the occupation of the people are the two great predisposing causes.

Mr. Barwell states that aneurism, which has always been less prevalent on the continent of Europe than in England and Ireland, is increasing there.

The correctness of Sarazin's views that hot climates, with great diurnal changes, and humid air, are a great predisposing cause, is borne out by statistics in a striking degree. It is found that the coast of the United States, with the exception of the most northerly portions, is that in which the disease is most prevalent, and that islands having a similar temperature have a relatively high rate of mortality from aneurisms, as the British Islands and New Zealand. The north coast of the United States is singularly exempt.

The vital statistics of Norway for 1875, 1876, and 1878, covering a total mortality of 44,043 deaths, show but four deaths from aneurism, a rate per thousand of 0.09.

The report of registrar-general for the province of Ontario, 1876, shows but 8 deaths from aneurism in a mortality of 18,623 from all causes, representing a rate per thousand of 0.43.

The State Board of Health of Michigan, in its reports for 1870–76, a period of seven years, reports a mortality of fifteen deaths from aneurism in a total of 85,189 from all causes, representing a rate per thousand of 0.17.

In 10,668 deaths in Iowa, during 1883, but three deaths from aneurism are recorded, a rate of .028 per thousand. In Connecticut, during a period of seven years, comprising a mortality of 71,566 deaths from all causes, 71 were from aneurism, a rate of .009 per thousand.

The statistics of four large cities, showing a total mortality during an average period of five years of 222,637 from all causes, and of which 521 were deaths from aneurism, give a rate per thousand of .312. The U. S. Census mortality statistics of 1880, for the entire United States during twelve months, comprising 776,893 deaths from all causes, of which 478 were from aneurisms, gives a rate per thousand of 0.63, which leaves us to infer that the population of cities is more subject to aneurism than the population of the country at large.

Table from the U. S. Census Report, 1880.

	Population.	Deaths from all causes.	Deaths from aneurism.	Rate per thousand.
TOTAL UNITED STATES	50,155,783	756,893	478	0.63+
Alabama	1,262,505	17,929	7	0.39+
Arkansas	802,525	14,812	3	0.20+
California	864,694	11,530	64	5.55+
Colorado	194,327	2,547	1	0.39+
Connecticut	622,700	9,179	2	0.22—
Delaware	146,608	2,212	2	0.90+
Florida	269,493	3,159	3	0.95+
Georgia	1,542,180	21,549	9	0.42—
Illinois	3,077,871	45,017	15	0.33+
Indiana	1,978,301	31,213	9	0.29—
Iowa	1,624,615	19,377	4	0.21—
Kansas	996,096	15,160	2	0.14+
Kentucky	1,648,690	23,718	8	0.34—
Louisiana	939,946	14,514	23	1.59—
Maine	648,936	9,523	2	0.21—
Maryland	934,943	16,919	8	0.47+
Massachusetts	1,783,085	33,149	21	0.64—
Michigan	1,636,937	19,743	3	0.15+
Minnesota	780,773	9,037	4	0.44+
Mississippi	1,131,597	14,583	7	0.48—
Missouri	2,168,380	36,615	12	0.33—
Nebraska	452,402	5,930	1	0.17—
Nevada	62,266	728	2	2.75—
New Hampshire	346,991	5,584	5	0.88—
New Jersey	1,131,116	18,474	17	0.92+
New York	5,082,871	88,332	93	1.05+
North Carolina	1,399,750	21,547	5	0.23+
Ohio	3,198,062	42,610	15	0.35+
Oregon	174,768	1,864	3	1.61—
Pennsylvania	4,282,891	63,881	57	0.89+
Rhode Island	276,531	4,702	4	0.85+
South Carolina	995,577	15,728	9	0.57+
Tennessee	1,542,359	25,919	11	0.42+
Texas	1,591,749	24,735	7	0.28+
Vermont	332,286	5,024	0	
Virginia	1,512,565	24,681	18	0.73—
West Virginia	618,457	7,418	6	0.81—
Wisconsin	1,315,497	16,011	3	0.19—
TERRITORIES.				
Arizona	40,440	291	1	3.44—
Dakota	135,177	1,304	1	0.77—
District of Columbia	177,624	4,192	6	1.43+
Idaho	32,610	323	0	
Montana	39,159	336	1	2.98+
New Mexico	119,565	2,456	1	0.41+
Utah	143,963	2,414	1	0.41+
Washington	75,116	755	0	
Wyoming	20,789	189	2	10.5+

New York (compiled from Health Reports).

Population, 1870 942,292

Mortality Statistics.

Year.	Deaths from all causes.	Deaths from aneurism.	Per cent.
1870	27,175	77	00.27
1871	26,076	68	00.25
1872	32,647	73	00.22
1873	29,084	77	00.26
	115,882	295	

San Francisco (compiled from Health Reports).

Population, 1880 233,700

Mortality Statistics.

Year.	Deaths from all causes.	Deaths from aneurism.	Per cent.
1876	5,669	37	0.70
1877	6,170	45	0.70
1883	4,988	48	0.96
	16,827	130	

Chicago.

Population, 1870 299,227

Mortality Statistics.

Year.	Deaths from all causes.	Deaths from aneurism.	Per cent.
1870	7,323	4	.....
1871	6,976	7	.....
1872	10,156	0	.....
1873	9,557	12	.....
1874	8,025	3	.....
1875	7,899	2	.....
	49,936	28	

New Orleans.

Population, 1870 191,418

Mortality Statistics.

Year.	Deaths from all causes.	Deaths from aneurism.	Per cent.
1870	7,391	16	.....
1871	6,059	11	.....
1872	6,122	8	.....
1873	7,505	9	.....
1874	6,798	13	.....
1875	6,117	11	.....
	39,992	68	

The medical statistics of the Provost-Marshal-General's Bureau, compiled by Surgeon J. H. Baxter, U. S. A., afford some interesting and curious figures regarding considerations of nationality, occupation, complexion, and social condition. There were recorded 501,068 medical examinations of adult males for enlistment in the Union army during the Pebellion, 1861–65. Of this number 162,820 were rejected for various causes, and of those rejected 89 had aneurisms, being a rate per thousand of .178.

Relation of Nationality to Aneurism.—The table relating to nationality does not serve as a distinct landmark in our study of predisposing causes of aneurism. 989 applicants for enlistment were natives of Holland, of whom one was rejected for aneurism, a rate per thousand of 1.011. Scotland comes next, the rate being .288, Germany following close at hand

with .255, the United States next with .193, Ireland .139, England .063, and British America .046. Fifteen other nationalities are recorded as having no rejections for aneurism, but their relations to the equator are so diverse that questions of climatic influence have no bearing upon an examination of the figures.

Nationality.	Number examined.	Rejected for aneurism.	Rate per 1000.	Number rejected.
Holland	989	1	1.011	.....
Scotland	3,476	1	.288	.....
Germany	54,944	14	.255	.....
United States	341,569	61	.193	.....
Ireland	50,537	7	.139	.....
England	16,196	1	.062	.....
British America	21,645	1	.046	.....
Mexico	91			
South America	79			
West Indies	580			
Wales	1,104			
France	3,243			
Sweden	1,190			
Norway	2,290			
Denmark	383	0	.000	.....
Switzerland	1,802			
Spain	148			
Portugal	81			
Italy	339			
Russia	122			
Hungary	89			
Poland	171			
Total	501,068	89	.176	162,820

Complexion.—The statistics of complexion are worthy of some consideration.

There were 117,029 males of dark complexion examined, of whom 13 were rejected for aneurism, a rate .111. There were 217,292 persons of light complexion examined, of whom 36 were rejected for aneurism, a rate of .166, which would apparently show that persons of light complexion are at a disadvantage to persons of dark complexion in the development of aneurism In the study of the question of sex, social condition, etc., it is universally admitted by all authors that females are less subject to aneurism than males. This is a point in favor of the theory that excessive muscular exercise is an important factor in the production of aneurism when we consider that the table shows precisely that difference between the frequency of the disease in the sexes which would naturally result from the difference in the amount of muscular exertion. The Provost-Marshal-General's medical statistics give a record of 159,393 married men examined, of whom 34 were rejected for aneurism, a rate of .213 per thousand, while of 174,928 single men but 15 were rejected for aneurism, a rate of .086 per thousand, showing an apparent advantage in the case of single men of nearly two and a half to one, from which it might be argued that celibacy was a probable prophylaxis against aneurism, and

this, a conscientious recorder is bound to add, seems the *reductio ad absurdum*.

	Examined.	Rejected.	Rate.
Dark	117,029	13	.111
Light	217,292	36	.166
	334,321	49	.147

Social Condition.

	Examined.	Rejected.	Rate.
Married	159,393	34	.213
Single	174,928	15	.086
	334,321	49	.147

Nationality.—In regard to nationality, statistics throw but little light on the subject. The only attempt on a large scale is found in the statistics of the Provost-Marshal-General's Bureau. The statements in regard to racial predisposition seem to have no better foundation than those in regard to syphilis. The statistics cover the examination of 501,068 men for enlistment, of whom 89 were rejected for aneurism. The "jugglery of statistics" is singularly shown by this table, for the large percentage found among Germans looks curious, when taken in connection with the admitted fact that Germany has a very low percentage of aneurisms.

Occupation and Temperature.—As to occupation, there seems no doubt that soldiers and merchant sailors are largely predisposed to aneurism. The statistics of the British Army, as set forth by Inspector-General Lawson, show a greater mortality than in our own.

The question of occupation to aneurism as studied in the following table only affords us presumptive evidence.

Relation of Occupation to Aneurism.

	Total examined.	Aneurism.	Rate.
Gunsmiths	466	1	2.146
Servants	1,083	1	.923
Grocers	1,107	1	.903
Masons	2,618	2	.764
Tailors	2,787	2	.718
Cabinet-makers	1,475	1	.678
Miscellaneous occupations	1,617	1	.618
Millers	1,828	1	.547
Tobacconists	1,964	1	.509
Boatmen	4,669	2	.428
Merchants	4,718	2	.424
Carpenters	11,740	4	.341
Blacksmiths	6,105	1	.164
Farmers	137,425	22	.160
Sailors	9,219	1	.108
Mechanics	10,422	1	.096
Laborers	59,464	4	.067
Bakers	1,975	11	.506

Of 72 occupations recorded, but 18 have been credited with rejections for aneurism, and of these, if percentages be counted, gunsmiths head the list with the enormous rate of over 2 per thousand, while the unskilled laborer has only .067; but there was only one case reported among gunsmiths, and a small number examined. The largest number of persons examined belonging to any one occupation was that of farmers, of whom 137,425 were examined, and 22 rejected for aneurism, a rate of .160, which may be set down as the nearest approach to certainty of relation of occupation to disease among all the persons examined, for it is manifest that the percentage obtained by gunsmiths is due to the small number examined.

The influence of occupation is well shown in the statement of Inspector-General Robert Lawson,[1] that in 1866 the deaths from aortic aneurism in the English Army were eleven times more frequent than among the civil population. A statistical comparison of the occurrence of all forms of aneurism gave:—

0.36 per 1000 among men of the Footguards and Line in the United Kingdom during 1862–65. (176,320 men.)
0.10 per 1000 among 217,170 men in the navy during the same time
0.09 per 1000 among 507,405 men (?) of the civil population of London in the year 1861.
0.9 per 1000 among 29,930 men of the white troops at Cape Colony during 1860–66.
0.7 per 1000 among 42,482 men of the white troops in New Zealand during 1860–66.

The navy list shows less mortality than either merchant sailors or soldiers. Much of this apparent exemption is doubtless due to the fact that they are invalided and discharged as soon as the disease is discovered, and thus swell the civilian rate. It is greatly to be regretted that the earlier Marine Hospital records do not show any rating of the men, on account of the Master's Certificate following the statutory definition of the term seaman. Thus, from the statistics, it is now impossible to prove what has been a matter of belief in the service, namely, that firemen are as subject to aneurism as they are admitted to be from heart disease and apoplexy with resultant hemiplegia. But in regard to the British Army, it is to be observed that the statistics are mostly drawn from the troops stationed in India, at the Cape of Good Hope, Honduras, and the West Indies, where the influence of climate has unimpeded sway, and at these points it is not believed that civil statistics would show any marked difference.

On investigation, however, I am compelled to think that firemen are not particularly subject to aneurism.

With a view of settling this question, I requested Passed Assistant-Surgeon Carmichael, of the Marine Hospital Service, now stationed at Pittsburgh, to investigate the diseases of glass-blowers and iron-workers,

[1] Army Medical Reports (1866), vol. viii. p. 548.

knowing that class of men to be exposed constantly to extremes of heat and rapid cooling off. The following is his report :—

"I have the honor to forward mortality reports compiled from the death registers of the Pittsburgh Board of Health, with reference to the prevailing fatal diseases among glass and iron-workers, commencing with the establishment of the Board of Health in 1870, and ending in 1883. I can discover but two cases of aneurism returned as such, though the number of deaths returned under the vague term heart disease is considerable.

"Diseases of the respiratory organs, including phthisis pulmonalis, as shown by the tables, cause the largest number of deaths among the workers in glass and iron. Attention is called to the number of cases of abscess of the liver, an affection said to be caused by exposure to a continued high temperature. The information obtained from those in charge of glass and iron factories, with reference to the health of the men employed, was unsatisfactory; some maintaining that those occupations were not injurious to health, and that the men employed by them lived to a good age. Others professed that they knew little respecting the health of the men employed by them, but thought they did not lose any men from sudden death. The temperature to which some of these workers are exposed is remarkable. I am informed, by the chemist of the Edgar Thomson Steel Works, that the men who work in the cupolas above the converters are exposed to a temperature of 145 degrees F., and work on half-hour shifts. He also informs me that their men suffer from diseases of the respiratory organs, owing to the sudden changes of temperature and the habit of drinking ice-cold water when the body is in a heated condition. Whether the latter would have any effect or not I cannot say, but the tables show that a large number die from lung affections. As I had no definite means of obtaining the average length of time a glass or iron-worker was employed, I thought it best to state the ages of the deceased, which you will find appended to the report for each year."

The tables[1] accompanying the report substantiate in every particular the views expressed. Total number of deaths in 14 years (1870–1883) among this class of laborers, 834; of which 2 were from aneurism—a rate per thousand of 2.39.

I also requested Surgeon Sawtelle, of the Marine-Hospital Service, to examine the fire-rooms of six ocean-going steamers, six harbor-tugs, and six ferry-boats, as affording accurate knowledge of the condition of the fire-rooms, and the statements of the engineers were taken from the log of the engine-room.

[1] Owing to the elaborate and extended character of these tables, I am reluctantly compelled to omit them.

List of Ocean Steamships, Tug-boats, and Ferry-boats, with average temperature of fire-room in each case, when under way, as furnished by the engineers of the respective vessels.

Date.	Name of vessel.	Route.	Average temperature of fire-room as estimated by engineers.
	STEAMSHIPS.		
April, 1884.	City of Berlin.	New York to Liverpool	110°
" "	Santiago.	" " Havana	120[1]
" "	San Marcus.	" " Galveston	90[1]
" "	City of Puebla.	" " Vera Cruz	92
" "	Neptune.	" " Boston	98
" "	St. Romans.	" " London	86[1]
" "	Finance.	" " Rio	107½[1]
	TUG-BOATS.		
" "	Gus. C. Adams.	New York Harbor	107½
" "	John Fuller.	" " "	115
" "	James Roy.	" " "	105
" "	Edwin Hawley.	" " "	117½
" "	Cyclops.	" " "	110
" "	F. D. Spraker.	" " "	100
" "	W. H. Vanderbilt.	" " "	100
" "	H. I. Vosburgh.	" " "	100
" "	Ivanhoe.	" " "	95
	FERRY-BOATS.		
" "	Southfield.	New York to Staten Island	110
" "	Northfield.	" " " "	100
" "	Westfield.	" " " "	100
" "	Middleton.	" " " "	95
" "	Fulton.	" " " Brooklyn	110
" "	Farragut.	" " " "	110
Average temperature for steamships			100+
" " "	tug-boats		105+
" " "	ferry-boats		104+

The average temperature of the fire-room of ocean-going steamers while under way is shown to be 100+, of harbor-tugs 105+, and of ferry-boats 104+. The maximum temperature was reached in the case of the steamer "Santiago," plying between New York and Havana, and the second highest on the "Finance," plying between New York and Rio de Janeiro; the first, 120°, the second, 107°. The lowest fire-room temperature was in the case of the steamer "Romans," plying between New York and London, 86°. A singular feature in the table is that the vessels showing the highest temperature are said to be "well ventilated." Notwithstanding the high temperature to which firemen are thus constantly subjected, it does not appear that they are more subject to aneurism than other classes of sailors. These facts, together with the mortality statistics of the workmen on shore, where they are subjected to even higher temperature, would indicate that increase of temperature alone is not a specially predisposing cause of aneurism.

SUMMARY.—In conclusion, it will be seen that, as far as this inquiry has extended, the only constant element among all the alleged causes of aneurism is that of climate; that neither syphilis nor alcoholism, nor occupation, nor heat alone, appears to have an appreciable influence on the

[1] Fire-room well ventilated.

causation of this disease. As to how far the influence of diet may extend in the production of aneurism, I have been unable to form any conclusion, but it is possible certain kinds of food may have a powerful influence. There are, as far as known to me, no systematic statistics showing the daily food of the population in any considerable portion of the earth. We know in general terms that the Eskimo eats whale blubber and seal fat, that the Chinese eat rice, with now and then a sucking pig, and that travellers have told us that the poorer classes of Sweden live on the most meagre diet with which it is possible to sustain life; but these statements are mere rambling generalizations. Let us trust that the United States in its new bureau of labor statistics, which I believe is obliged to gather statistics on this very point, may at least give us something definite, which may throw a light not only upon the particular disease in question, but upon all other acquired diseases. There is no doubt that any study into the causation of *any disease* is incomplete which does not take into consideration the food as well as the environment of the individual. Medical geography is important, but the study of alimentation is quite as important.

Frequency of Aneurism among Merchant Sailors (from Marine Hospital Reports).

Year.	No. of patients.	Mortality.	Cases of aneurism.	Deaths from aneurism.	Per cent.
1872	13,156	521	8	5	
1873	13,529	646	7	7	
1874	14,364	452	15	1	
1875	15,009	462	12	4	
1876	16,808	434	11	2	
1877	15,175	379	11	2	
1878	18,223	324	15	7	
1879	20,922	387	10	7	
1880	24,860	359	15	5	
1881	32,613	455	22	6	
1882	36,184	485	23	7	Rate per 1000
1883	40,195	502	27	9	
	261,038	5416	176	62	.114

ARTICLE VIII.

THE THERAPEUTIC USE OF IODOFORM-COLLODION, ESPECIALLY IN NEURALGIAS. By WM. BROWNING, of Brooklyn, Physician to Department for Nervous Diseases, Long Island College Dispensary.

IT is our intention, in the present article, to give some experience with this remedy, together with notes on the preparation itself and a brief study of its action.

A detailed review of the previous uses of this solution is hardly necessary. Of late it has been much used in surgical dressings,[1] but it has also been advocated notably by Germans[2] in a few nervous troubles. My experience with it extends over a period of 3–4 years.

The method of application which has proven most satisfactory will be given first, then cases, and finally its action and the conclusions arrived at.

It is, of course, understood that this is an external remedy. The strength usually employed has been 1 of iodoform to 15 of collodion. Moleschott recommends a 10 per cent., and Cösfeld a 5–20 per cent., solution, while one of only 3 per cent. is sometimes used. A half ounce is usually sufficient for any ordinary single application. It keeps well if the bottle is properly corked, though a change takes place in it—iodine, as will be shown, being set free.

I have found it most effective when painted on in very thick layers. This is conveniently done with the usual camel's hair brush. As soon as one coating becomes a little firm another is applied, and so on until it appears to have an average thickness of 1–2 mm. Where contractile collodion is used, it should, by preference, be applied early in the day, that the patient's sleep be not disturbed, since it continues to shrink for some hours, and may thus occasion discomfort, though this is usually minimal compared with the neuralgia.

The paper-like layer will begin to break off in a day or two, and may be completely removed after forty-eight hours. If it cracks previously, a little oil or vaseline may be rubbed in. The nitro-cellulose is originally dissolved in a mixture of sulphuric ether and strong alcohol. Neither of these helps much in removing the crusts. I have also tried acetic ether, recommended by Binz, as a much better solvent, but it did not prove very useful, certainly not in removing thick crusts. The best way is to raise up a corner and tear off with a jerk. Of course any hairs on the integument should have been shaven close before applying.

In the neuralgic cases, a cure, when effected, was usually accomplished with one or two applications as just described. Where it simply gave relief, it was, like other symptomatic treatment, repeated accordingly. Starched garments directly overlying the application may become dark blue, to the consternation of the patient, until the cause is explained. The

[1] Of course its use in surgery, and, *e. g.*, as recently recommended by Lyttle, in erysipelas, depends largely upon its antiseptic properties, and is for a purpose totally different from ours.

[2] Perhaps the first person to use iodoform in nervous affections was Kennedy (*Phila. Med. and Surg. Reporter*, May, 1867, and January, 1870), but his cases are not very clear. He used it for the most part internally, but later sometimes as an ointment. The first mention which I find of the use of the solution in collodion in these troubles is by Moleschott (*Wien. Med. Wochh.*, 1878, Nos. 24, 25, and 26), who began using it about 1870, and refers to Kennedy. To Dr. L. Conrad, of New York, I owe my first knowledge of its possible usefulness in neuralgias.

yellow iodoform powder will also rub off somewhat after the coating has become dry. These little inconveniences might doubtless be avoided, if thought worth the trouble, by repainting, as soon as it is dry, with non-medicated elastic collodium, or, as has been suggested, with solution of gutta-percha. Occasionally patients speak of the spot feeling cool, perhaps meaning over-sensitive to cold, for some time afterwards. This, and occasional excoriation and slight pigmentation, are the only subsequent annoyances which I have noticed.

Supraorbital Neuralgia.

CASE I.—A man of 39 years, who claimed to have suffered from attacks of pain in the right frontal region for eighteen years. It had, however, never before lasted so long at one time—already two weeks. He could give no cause for his trouble; no history of malaria or syphilis. He had an unusually long, narrow skull, the more noticeable from his being a German. Dolorous point at exit of right frontal nerve. He was treated with a great variety of measures in the course of the first month; amongst others, internally with quinine, iodide of potassium, opium, digitalis, and salicylate of sodium, locally with cold, leeches, a veratrum ointment, and liniments of turpentine, camphor, ammonia, and chloroform. Yet, despite all efforts, the neuralgia persisted with only slight, transient improvement, chiefly after use of some turpentine liniment.

At the end of a month he was taken with typhoid fever, which ran a moderately severe but short course. Until fairly convalescent, a period of about two and a half weeks, he had no trouble from the neuralgia. Then it set in again, not at first as severe as formerly, but soon becoming so. The previous remedies now failed completely, whereupon a thick coating of iodoform-collodion was applied. It sufficed to dispel the pain, but left an indefinite tenderness; this with the pain-point disappeared after the second coating. The patient perceived no further unpleasant or peculiar sensations. He remained eighteen days longer under observation without any recurrence.

CASE II.—A large, blonde, healthy-looking man of 32 years, who stated that he had suffered a year previously from malaria. Claimed to have been feeling unwell this time for about five weeks. Began with pains in various parts of the body—nothing very definite. After taking a Turkish bath, the pain settled in the left half of the head, being especially severe about the forehead. The pain was worst about midday. Left eye constantly full of tears. The points of exit of the left supraorbital, and in a less degree of the left occipital nerves, were sensitive to pressure. Said he had already taken quinine without avail. It was given again very faithfully, but to no purpose.

Two applications (interval of two days) of the iodoform-collodion to the distribution of the left supraorbital nerve sufficed to disperse all subjective symptoms. The sensitiveness of the pressure points had vanished. The profuse lachrymation lasted one day longer. He was seen fourteen days later, and had had no relapse.

CASE III.—Thin, nervous man of about 45 years, suffering from malaria. There was reason to suppose that the too industrious pursuance of his marital privileges was part cause of his nervous condition. His chills were soon stopped with quinine, but a severe supraorbital neuralgia

of one side persisted. One application of the solution remedied this. He did not continue either cure longer, though urged to do so. Some weeks later, I had a note from him saying that the chills were back again, but of the neuralgia he made no mention.

CASE IV.—Lighter than the preceding ones, of apparently malarial origin, and where quinine had helped, but did not entirely cure; the solution was also successful, although slower in acting.

CASE V.—Well-built man of 47. Works in a rather moist basement. First suffered from supraorbital neuralgia while in the army, twenty years ago. At that time it affected the left side. A sister said to have attacks of the same trouble. Thinks he acquired malaria in France some years ago, and that one attack of neuralgia was cured with a quinine mixture. Has had several attacks, oftener, as now, in the spring. The present very severe one had lasted a week already. Pain chiefly in right frontal region. Begins about 6 A. M. and lasts until a little after noon. He had used various strong liniments with little effect, though, on the whole, it was not quite so severe as at first. Exit of right supraorbital nerve oversensitive to pressure. Quinine was given for two days without any noticeable improvement. It was then coated at evening with a thick layer of the solution. In his own words, "Pain returned next day, but not quite so severe; again a little less on second day, and on third there was none at all, but only a little soreness."

Dr. McNaughton, of Brooklyn, has favored me with the three following cases. He directs his patients, in case severe pain returns in a few hours, to remove the whole coating and apply afresh. He uses contractile collodion.

CASE VI.—An anæmic girl of 22 was attacked for the first time with right supraorbital neuralgia. Codeia internally. Iodoform-collodion locally. Next morning no better. Through a misunderstanding the codeia was dropped and the solution continued. By night the pain had disappeared. Relapse at end of a week. Remedied forthwith in the same manner.

CASE VII.—Married lady of about 30. First and only attack about a week after confinement. Unusually severe. Whole region tender. Three separate coatings in 2–3 days completely cured. No relapse at end of 8th month, though lachrymation in corresponding eye at times since.

CASE VIII.—Man of 35 years with measles. Neuralgia of supraorbital set in with the appearance of the eruption on the head. The solution freely used gave no relief. The neuralgia lasted 5–6 days in all, and could only be relieved by hypodermics of morphia. No relapse in the 5 months since elapsed.

It was thought that there was some neuritis in this case. Evidently the neuralgia had some close connection with the measles-eruption.

A ninth case has been kindly reported to me by Dr. Bender, of Brooklyn.

CASE IX.—Man of 40 years, suffered a year previously from malaria, and seemed to be still suffering from a kind of malarial cachexia, although he had now no chills. His present complaint was a bilateral supraorbital neuralgia. Two or three applications (very thick) of iodoform-collodion quite relieved this. The neuralgia had not previously been treated in any way, but he received some quinine at the same time as the painting.

Dr. Bartley, some time since, also told me of at least one case where he had used it successfully. I have used, and known of its being used with advantage in several other cases of this affection, but cannot furnish the notes. It is proper to add that I have not known of its failure in any case of simple or idiopathic supraorbital neuralgia, and even brow-ague; although if the number of cases were larger there would naturally be failures to chronicle, as is the case with the best of remedies.

Eight cases at first resembling lumbago or sciatica, but proving either on immediate examination or subsequently to be as follows:—

CASE X.—Cheesy softening of two lumbar vertebræ with consequent bilateral psoas abscess, in a man of about fifty years (autopsy). In the middle stages of the trouble, which lasted 1½ to 2 years, considerable amelioration of the patient's severe pain was secured by repeated local use of the solution.

CASE XI.—Tumor, size of fist, on inner surface of left os ilium with severe pain there and in lumbar region. The solution in front and over small of the back gave more relief, though of course but transitory, than any other measure. It seemed as if the tumor itself diminished in volume under the repeated applications. He went to work again slightly improved, and was lost sight of.

CASE XII.—Partial anchylosis of both hip-joints in a man of 48. Much pain on outside of thighs. Local use of the solution gave no relief from the pain.

CASE XIII.—Incipient spinal affection, at first simulating lumbago, the more so since patient claimed to have had previous attacks. The solution over the seat of pain and stiffness quite relieved him. After a time he came again, when the benefit from it was less. When last seen he had some symptoms of spastic spinal paralysis.

CASE XIV.—Tumor of kidney (autopsy), with pain in lumbar region. No benefit.

CASE XV.—Bladder trouble with severe lumbar pains, much relieved for brief periods by the solution.

CASE XVI.—Chronic kidney trouble, possibly of gouty nature. The pain in sacral region and thighs was at first somewhat relieved by the application.

CASE XVII.—Lumbago (myalgia) in a young man with a marked prominence of one of the lumbar vertebræ; this latter he claimed to have had from childhood. The severe, subjective, radiating and local pains were only slightly improved by the solution, though the diffuse tenderness to pressure, and the points were dispersed as far as the application extended. (Cured with faradic brush.)

Amongst these there is no case of idiopathic sciatica (recognized by some high authorities, *e. g.*, Paget, as rare), and at most but one of lumbago, viz. Case XVII. In the first seven of the series there was some tangible deep-seated cause, and of so serious a nature that any permanent improvement from this remedy was not to be expected.

Various Neuralgias.

CASE XVIII.—Intercostal neuralgia over right mamma in a man the subject of extensive arterio-sclerosis, and presenting nephritic symptoms.

This was completely relieved by a single local application. There was no relapse for a few weeks, but I believe he subsequently complained a little of similar pains, whether in the old spot I cannot say.

CASES XIX AND XX.—In at least two other cases of intercostal neuralgia (pleurodynia?) it proved successful.[1]

CASE XXI.—Man of 29 years. Had a tooth drawn not long ago. Since then has suffered from what appears to be a neuralgia of the left facial nerve; its exit back of jaw painful on pressure. The solution locally. Cure. No relapse at end of 6 months.

CASES XXII AND XXIII.—Two cases of inframaxillary neuralgia (teeth sound) cured in this way have been related to me by medical friends. In these it would appear, from the suddenness of the relief, that the ether was perhaps the chief agent.

CASE XXIV.—Man of 42 years. At a recent fire he caught cold in the left side of the neck. Pain is severe in the morning, lessens about 9 or 10, but gets worse again towards night. Can hardly sleep more than an hour, when he becomes restless. The fear of increasing the pain makes him keep his head very fixed. Pain runs at times into the shoulder or up to the ear. Very tender to pressure over the left occipital nerve, but not elsewhere. (It appeared to be rather a slight neuritis than a simple neuralgia.) Reports himself relieved by the solution, with a partial relapse three weeks later, which was again remedied in the same way. Whether the cure was then permanent cannot yet be stated.

CASE XXV.—Obstinate occipito-cervical neuralgia. Points of exit of occipital, and in less degree of frontal nerves, decidedly sensitive to pressure. After two applications to both regions the pressure-tenderness had quite disappeared, but the neuralgic pains and general subjective condition were not essentially altered. Pressure-sensitiveness returned to a slight degree after a couple of months, but never became marked again. [This case I have ventured to call an occipito-cervical neuralgia for want of a better term. Neuralgias having this seat are known to be very obstinate.]

Spinal Irritation.

CASE XXVI.—Thin, middle-aged workingman. Pain in middle dorsal region of back while standing or moving; "cramps" encircling upper part of abdomen, especially about stomach. Great tenderness of the said spinal region on pressure, soreness when lying on it, etc. No known cause unless bending over his work. Cold locally and rest were first tried, but to no great purpose. The iodoform-collodion was then used. It relieved so far that he returned to his work, though he still felt some "uncomfortableness" at the back. Not seen again.

CASE XXVII.—Woman. Hyperæsthesia along spine and in lower limbs. Great tenderness to pressure laterally from the spinous processes in two places, one in lumbar, the other in dorsal region. After the hyperæsthesia had been diminished by the electric brush, the two regions were coated with the solution. On removing this a day or two later, the pressure-tenderness at the nerve exits had completely disappeared. Subjective relief was, however, minimal, and it was not thought best to repeat the procedure.

[1] Moleschott mentions curing an intercostal neuralgia with syphilitic myocarditis by the external and internal use of iodoform for months. Not a very close parallel to my cases.

CASE XXVIII.—Lady with mild attack of spinal irritation. (Tenderness laterally to dorsal vertebræ, etc.) The solution gave temporary relief, much the same as did collodion alone.

CASE XXIX.—Woman of 31 years. Distressing pain and sensitiveness between shoulder-blades, especially when stooping or at work. Marked pressure tenderness about region of second or second and third dorsal vertebræ. Stout, otherwise healthy woman. Iodoform solution (1 : 12) locally. Improvement even subjectively, though there is still some pain in the arms and left shoulder. The spot formerly so sensitive can now be freely pressed, but there is a less tender spot two inches to the left of the old one.

These four cases, perhaps, illustrate the opinion of Anstie, that local applications are sometimes very successful, often, however, of no value. The internal administration of iodoform in spinal irritation has been recommended by Busch. On the whole, the solution will hardly be worth trying, except in slight and regionally limited cases of this affection.

The solution was also tried in a number of cases of enlargements of and effusion into joints, but not always with abiding benefit. In several cases of subacute and chronic rheumatic swelling of the *smaller* foot and hand joints in young adults, it did more than any other remedy. One young man, the balls of whose toes had for a long time been so tender that he could hardly step on them, was thus brought to his feet again—although not completely cured, even after several coatings. Another youth, a grocer's boy, with subacute swelling and tenderness of the middle tarsal joints, was thus cured. His first acute attack had been remedied quickly with salicylate, but this second less severe one did not yield to that remedy. He had had no relapse when I saw him again some time after. In certain other cases apparently as favorable as the above, no advantage was obtained. In one where finger and elbow-joints were the seat of swelling, only discomfort resulted. In another of chronic effusion into a knee-joint, no effect was derived from repeated use of this agent.

The usual procedure in these joint cases was like that previously detailed, a thick layer, and, where admissible, quite around the joint. With knee and elbow the popliteal and cubital spaces should be left free.

The mechanical compressing action of the contracting collodion[1] is in these cases one of the chief factors, and in applying regard should be had to securing this effect. To this principle Gamgee has recently called attention in connection with orchitis, etc. In this and in hydrocele it is rather customary to employ the solution in elastic collodion; the contractile, however, I have also found more effective. A good thick layer tears the skin less than a thin one.

[1] Collodion alone has been recommended for local use in acute rheumatism, *v. Phila. M. & S. Rept.*, 1880.

Besides the above cases I have tried the solution in at least an equal number of others; in some with success, but where complications or want of notes render them unavailable here; in others, mostly hopeless troubles, from some imagined analogy, without serious expectation of good resulting. These can be made use of only in discussing certain points. A trial of it in locomotor ataxy might be cited. It was thought that possibly the lancinating pains could be relieved in this way. The solution was repeatedly applied to considerable lengths of the spine. Effect, *nil.*

In regard to its action this solution is only to a limited extent a counter-irritant; it is much more gradual in accomplishing its full effect. There are some four principal ways in which its ingredients exert an influence:—

1. Ether and alcohol—rapid local anæsthetic.
2. Nitrocellulose—mechanical by its contraction.
3. Iodoform—slow local anæsthetic.
4. Iodoform and free iodine—absorbefacient.

1. The evaporation of the ether and alcohol produces a degree of cold sufficient for the time being to drive the blood pretty completely from the immediate tissues, and reduces very markedly the cutaneous sensibility. Ether pure has been much used for this latter purpose, either as spray, or, as advocated by Hughes, in form of lavements and douche. The application of simple collodion for this purpose is often preferable to either of these methods. It seems to stick to the skin more tenaciously than the solution. The latter will in some cases dispel neuralgic pain in a few minutes without its returning. Here it is doubtless the ether that acts, although the iodoform may help to establish the cure. To the suggestion that in all cases it is the collodion and not the iodoform which relieves, it may be replied that in some cases, as, *e. g.*, Case 5, a *gradual* cure was effected by a single application, similarly in other cases by two applications. That in these cases it could hardly have been the contraction of the drying collodion is evidenced by some cases remedied by a solution in elastic collodion.

2. Then follows the powerful action of the contracting collodion. It not only keeps the skin very anæmic, but pulls vigorously on the nerve-endings, and this is kept up with increasing force for at least 6–8 hours. The effect of such contraction can be best studied after applying pure collodion, the membrane thus formed not obscuring the structures beneath. It pulls the skin from all directions, producing, if the area be large, folds and even fissures. The shrinkage in one case, where the coating of solution was not very thick, amounted to $\frac{1}{8}$ the diameter (4 to $3\frac{1}{2}$ in.); the area had consequently diminished about one-quarter.

It is known that "neuralgias can be lessened and even suspended completely by strong pressure over the point where the painful nerve emerges from openings in the bone," etc. Inasmuch as the solution is, where possi-

ble, also applied directly over such points, we can see that the long-continued pressure, though not so closely directed at the one spot in the nerve, may still have a very similar and more lasting action.

Perhaps protecting the part from air may help to relieve, like the use of pure flexible collodion in herpes. Dr. McNaughton tells me that in two cases of herpes quick and almost perfect relief was afforded by iodoform in elastic collodion, though possibly not better than might have been afforded by pure collodion.

3. As to the action of the iodoform there is more question. Its fresh solution in collodion is nearly colorless, slightly yellowish. On standing it gradually acquires an amber and presently a brownish red color very like that of tincture of chloride of iron. This must be due to iodine being set free, since it then gives the starch reaction, though iodoform powder alone or its fresh solution does not (*v.* also Odin, *Phila. M. & S. Rept.*, 1874, vol. 30, p. 84, who asserts the same and also claims that in red bottles less iodine is liberated).

It is known that iodine is often demonstrable in the urine after painting with its tincture or even after inunctions of iodine salve or oil. Moleschott in one case obtained its reaction in the urine only 25 hours after its external use, and saw it continue in one case five days after its application was stopped. Falkson (*Arch. f. Klin. Chirg.* Bd. 28, p. 112) is inclined from various experiments on animals to believe that dry crystallized iodoform can be absorbed through the intact epidermis. It is in this condition that the iodoform exists either in whole or in part in the dried scales from the solution, as may be seen by comparing them under the microscope with crystals formed from a solution in alcohol. A condition very favorable to epidermatic absorption is produced by the tension of the coating; for pressure is stated by Eulenburg (*Percutane Arzenei-application*, 1880) to greatly promote this. It is therefore presumable that some of the iodoform itself, and of the free iodine when present, passes through the epidermis and still more through minute fissures, on remaining so long in contact with it.

Iodoform has for some years been recognized as being either in strong solutions or in substance a very powerful local anæsthetic. It was originally used for relief of pain in open cancers, sores, etc. A solution of it in chloroform was also recommended for neuralgias. In this form, however, it does not seem to have any established reputation, partly perhaps on theoretical grounds. We believe that its solution in collodion is incomparably superior, and that as regards both efficacy and cleanliness this will prove a really satisfactory method for securing its local action where the epidermis is intact. Perhaps it should be stated that in lighter neuralgic affections a solution in elastic collodion has often sufficed, but where the trouble is obstinate or severe the contractile is far preferable.

This brings us to ask what part of the nervous system is acted upon,

and in what way. Is it simply a local anæsthetic? We may recall the theory so strongly urged by Anstie and others, that idiopathic neuralgias are dependent on certain—probably anæmic—changes in the nerve-roots or centres.

If this be true, a remedy that directly cures them must do so by acting on the said central structures. From Schüller's well-known account (1874, reprint) of the effect upon the meningeal circulation, of large sinapisms, it is imaginable that the prescribed application might also have some effect upon the meningeal resp. cerebral vessels. Strange as it may seem, at least two Germans[1] have reported cases of meningitis (tubercular) cured by iodoform collodion, and Moleschott even claims to have cured acute hydrocephalus with it. Whether they accomplished what they believed or not, they seem to have succeeded in deeply impressing central nerve apparatus. From these considerations we must acknowledge that the remedy *may* have a powerful central action. Still, most of my own observations corroborate the view that it has a very decided effect on the peripheral portions of nerves, and that thereupon depended its value in my cases. The fact that in several cases of palpable peripheral nerve-lesions much relief was obtained from this measure indicates that the nerve-trunk was acted upon. Pretty decisive on this point, and otherwise interesting is another result which I have constantly observed. *The points in nerves, painful on pressure, lose this over-sensitiveness after one or two applications.* In simple neuralgias this appeared to occur simultaneously with the cure of the main trouble, but in other cases this was not so. In these (*e. g.*, Cases 17, 25, 27) the pressure tenderness indeed disappeared, but the malady itself did not seem to be much affected. It would therefore seem clear that the peripheral nerve-trunks or branches must have been acted upon. The power of dispelling the sensitiveness of these pain points, without in given cases affecting the main trouble, has not to my knowledge been specially called attention to in connection with any remedy. In these cases the dolorous point cannot be considered as identical with, or the cause of the chief trouble, but rather as consequent to it, the trouble itself being situated in some more central structure. Conversely, neuralgias cured by it are probably peripheral, thus furnishing additional evidence, were it needed, against accepting too widely the theory that their seat is in the posterior nerve-roots.

4. There is reason to believe that the absorbefacient action may also be of value; for, says Anstie, "the true Valleix's point, when it has become established for some time, is the scene of trophic changes involving hyperæmia and thickening of the parts surrounding the nerve." We have seen that the over-sensitiveness of these same points is remedied by the

[1] Bauer (*Deut. Med. Woch.* 1882, No. 18). Not a very clear case. Cured by use of the solution about neck and head for 4 weeks. Cœsfeld (*ibid.*, 1881, No. 37) believes he cured 2 out of 7 cases.

application. The skin doubtless remains more or less impregnated for some time. Possibly old solutions containing free iodine are more efficacious; if so, we have but to add the tincture to fresh solutions.

Some care should be exercised where the skin is very thin or tender. The method is therefore obviously and from experience less to be recommended in females than in males. In exposed parts of the body it may be objectionable for æsthetic reasons, yet, on the whole, less than the so freely used iodine.

The class of troubles found most amenable to this treatment was narrowly localized neuralgias, especially when corresponding to some particular nerve and not dependent on any demonstrable lesion. In fact, if a neuralgia, or what is thought to be one, proves intractable to this means, we should doubt its being a purely functional affection, and look carefully for some tangible cause. It has thus a certain diagnostic, as well as therapeutic value. Several times its complete or partial failure has led to a more searching and successful examination. Even in such cases much temporary relief is often afforded.

Prolonged use of a solution in elastic collodion might prove valuable in neuritis,[1] though I have never tried it in a well-marked case.

Supraorbital neuralgias, even of malarial origin, particularly if the miasmatic infection dates back some time, seem quite amenable to this treatment. Of course it is not recommended as a substitute for quinine here, but only as an adjuvant where the latter fails or acts too slowly.

In those cases where transient or ill-defined pain is felt, sometimes in one brow and again in the other, with perhaps frequent headaches or pains elsewhere, there is no occasion to have recourse to the solution. The same holds for indefinite and fleeting pains in other parts of the body.

Better results are usually obtained where the medical attendant can make the application himself.

Article IX.

A Consideration of the Classification of Functional Neuroses of the Throat and Nose.[2] By H. Clinton McSherry, M.D., Professor of Diseases of the Throat and Chest in the Baltimore Polyclinic and Post-Graduate Medical School; Fellow of the American Laryngological Association, etc.

Functional neuroses of the larynx, the naso-pharynx, and œsophagus are, in some phases, constantly coming under the observation of all mem-

[1] Moleschott *l. c.*, thus cured a left sciatic neuritis following typhoid fever.

[2] Candidate's Thesis, presented to American Laryngological Association.

bers of the profession, but particularly of the laryngologist, and, in the absence of other marked apparent explanation of the cause, are most frequently classed as hysterical, this being nearly invariably the diagnosis when the condition is noticed in women, and especially if they are not far removed from the age of puberty or are subject to some menstrual disorder.

That a considerable proportion of these cases are properly attributed to hysteria cannot be questioned, but that those in which the symptoms have appeared as the result of exhaustion of the nervous system from overwork or mental worry, *i. e.*, from neurasthenia, or where the functional activity of the nervous system is lowered from anæmia, should be so designated, as is not uncommon, appears to be wrong, for in hysteria there has usually been freedom from both physical and mental strain preceding the development of the symptoms, the nervous system is more often in an exalted rather than in a depressed condition, and anæmia is rather rare. Therefore in this article my endeavor will be to define as clearly as possible and reduce to more restricted limits the proper use of the terms "hysterical loss of voice," "hysterical spasm," "hysterical paralysis," etc., and in addition to this to consider briefly the other forms of functional neuroses which affect the throat and nose, believing that in so doing something may be gained in the treatment of these troubles, which are sometimes intractable because they are diagnosticated hysterical in nature, from a want of acumen in searching out the real cause.

The two classes of cases that have been spoken of will be described as, 1st. The Hysterical; 2d. The Neurasthenic; and to these will be added a 3d class, or The Reflex Irritative Cases, in which there are marked perversions in the function of the peripheral nerves in the throat and nose which cannot be placed under the head either of hysteria or neurasthenia, but must be studied under the caption of this paper, as the symptoms presented are not dependent on disease in the parts themselves nor in the nerves supplying them, but in organs or portions of the body more or less remote from the seat of the functional disorder.

As nearly all the throat neuroses are called "hysterical," it is important that the accepted views as to the meaning of this word should be understood, and therefore some statements of recognized authorities will be given. Hammond says that "Louyer-Villermy describes every hysterical woman as stout, dark, plethoric, full of life and of health," etc., because he lived in the south of Europe where women of this description were most common; but, on the other hand, Sydenham, Whyte, Copland, and others who lived in the north of Europe, described hysterical women as having exactly the opposite characteristics;" and he adds that Briquet remarks, "there is no hysterical constitution appreciable by external appearances. The disease takes women as it finds them, blondes, brunettes, stout, thin, strong, weak, ruddy or pale, there is no choice."

Further than this Rosenthal quotes from Briquet's table of one thousand cases that "eighty-seven occurred in children between five and twelve years of age, and fifty in men." Rosenthal says he has seen the condition in children and men, and that Bernutz (*Gaz. des Hôpit.*, 1874) has shown "that the genital organs have been found perfectly healthy in a large number of autopsies on women who were undeniably hysterical, and also that Grisolle (*Gaz. des Hôpit.*, 18, 1853) and Castiaux (*eod. loc.*), have seen congenital absence of the vagina and uterus in two undoubted cases of hysteria."

From these statements it is apparent that the term "hysteria" (ὑστέρα) is a misnomer, as far as it indicates the cause of the condition, but since the name has become arbitrary and conventional, the cases which might be with some propriety included under it should be defined with reference to this conventional usage, and the fact that many women who are hysterical have some uterine or ovarian disease, and that in such cases there is often a relation between the two, must be recognized; but when we consider how many women have disorders of the sexual apparatus without the appearance of any hysterical symptoms, it is fair to suppose that these derangements only develop the condition in those whose psychical or nervous constitution predisposes them to the disease, or, in other words, the manifestations of the state become more marked through the influence of a reflex excitation of the nervous system, but that many of these cases of so-called hysterical throat disorders should with greater propriety be called reflex irritative cases. Erb speaks as follows of the symptoms of hysteria: "They may be produced by disturbances which are the least palpable, and are psychical in nature, particularly the powerfully acting or depressing emotions;" and Charteris defines as the cause, "mental lack of aim in life, throwing the mind and emotions back on self."

These quotations from competent observers have been presented, not for the purpose of entering into the pathology of hysteria, but as leading up to the statement that, in classifying a functional neurosis of the throat as hysterical, we must be guided not so much by sex, age, or menstrual disorder, as by a peculiar psychical state that induces the patient to complain of certain symptoms for which there is a slight justification, but which *appear* to be very similar to those of a malingerer. Handfield Jones describes this state in the following words: "Hysterical is commonly used to designate a patient whose complaints are considered more or less exaggerated, and who is not *bona fide* anxious to get well and cease from being an object of nursing and sympathy." In these cases the symptoms often present great inconsistency, and if routed out by treatment, physical or moral, will frequently reappear in some other form.

Two patients who have been under my care are good illustrations of this class, and their histories will be related here. One of them is a condition ordinarily met with, but the other is more unusual. The first was a young

lady who had been relieved of a hemiplegia (hysterical?) after several months of Dr. Weir Mitchell's skilful treatment, but to the great distress of her parents she lost her voice, which had not been previously affected, a short time after her return to Baltimore, and as she had not been able to speak above a whisper for some weeks, she came to me for advice. On introducing the laryngeal mirror, and telling her to say "ah," good approximation of the vocal cords was seen, and a fairly loud clear tone was produced; then the mirror was removed, and she was asked to count one, two, three. This she also did in a good voice by speaking slowly; but on my asking how long she had been unable to speak aloud, she answered in scarcely an audible whisper "six weeks." This patient remained under my care for over a year, and, although I made use of all the means of treatment usually employed in such cases, as galvanism and faradism, externally and internally, the local application of ferri perchlor., and other solutions as well as tonics and nervines internally, while she did regain her voice for a short time after something was done which seemed to impress her imagination, as after the first introduction of the laryngeal electrode, the effect of each particular means of treatment was soon lost, and at the same time the voice disappeared.

This young lady was about twenty-five years of age, was very intelligent and cultivated; her social status was good, and her parents wealthy and devoted to her; yet I think the cause of her condition may have been explained by the physician who brought her to me, when he told me that I must not rely on any statements made about the case by her father, as he was of rather feeble intellect, which leads me to the remark that the hysterical predisposition is, according to Jolly and many authorities, an inheritance from mental and nervous affections. This case looks very like malingering, yet her coming for treatment was entirely voluntary; she submitted with a good grace to all the remedial measures I adopted for over a year, seeming most anxious for the restoration of her voice; and she had nothing to gain in any way by feigning the condition.

The apparent inconsistency of not being able to speak, but being able to sound the voice in pronouncing a single syllable or counting slowly, is sometimes observed as well as cases which no doubt all laryngologists have seen, who said that they were able to sing but not to speak aloud, and also those who could not speak but had at the same time a loud ringing cough, which are probably to be explained by the concentration of the will-power for a special effort, but when the mental faculties are exercised, as in sustaining a conversation, the ability to approximate the vocal cords is lost. Such instances as those mentioned I have from time to time met with; but in the second case, which I am about to relate, I encountered a condition I had never seen before, and which is so rare that I can find no record of it.

This was a young woman about twenty years of age, who said that for

some months she had been obliged to keep her mouth open all the time, as it was impossible for her to breathe through the nose. My first idea being, naturally, intra-nasal hypertrophy or polypi, a most careful anterior and posterior nasal examination was made, but no obstruction could be discovered, nor was there any difficulty in passing a flexible, hard rubber probe with a pledget of greased cotton on the end through the nose and into the pharynx. In order to test whether she was malingering or not, snuffs and the inhalation of irritating vapors were used for the purpose of making her sneeze, but without effect, and on a number of occasions when her mouth was held closed there were always evidences of want of aëration of the blood and impeded circulation. Once, however, when her mouth was being held tightly shut by a very muscular medical friend of mine, after the interference in the circulation was shown by the swollen veins and darkened countenance, although there was no perceptible movement of the alæ nasi, there was after a couple of minutes a slight movement of a thread held under the nose. I have been told by a physician that previously to her coming under my care he had treated the girl for some other hysterical disorders. After coming to me for a number of visits she disappeared, and I did not see her again for several months, when she told me that she had recovered the use of her nose for its natural purpose without treatment.

The positive explanation of this case would be as difficult as it is interesting. She was able, she said, and as was demonstrated by her using snuffs, etc., to take a deep inspiration through the nose, but all her attempts at expiration were in vain. There was no paralysis in the nose or of the velum, and, therefore, I am inclined to the opinion that on her making an expiratory effort to breathe with her mouth closed, a spasmodic action was produced of the levator palati, the tensor palati, and perhaps the palato-pharyngei muscles, by which the posterior nasal region was as completely shut off from the lower pharynx as it is when those muscles are called into play to prevent regurgitation of food during deglutition.

To these cases might be added others which are frequently observed, where, when examining with the laryngoscope, and the patient is told to say "ah," there is no approximation of the vocal cords. These, as well as the others, represent the first or hysterical division of functional neuroses. This condition Russell Reynolds describes as follows: "When there is loss of voice in hysteria there is no attempt made to whisper loudly; the failure is evidently not in the apparatus of the voice as a mechanical production, but *in the will to put the machinery into play.*" . . . . "The vocal cords are widely separated, with but slight effort being made for their approximation on attempted phonation," or if there is an attempt made it is ineffectual, for, as Türck states, "in certain cases of hysterical aphonia there is rather a derangement of co-ordination than a paralysis." To this evidence may be added Stoerck's remark, that "it is the[n] [i]n the

hysterical nothing but an imitation of the condition, an unconscious want of volition to properly innervate the paretic muscles." When there is a true paralysis of the laryngeal and other throat muscles in hysterical cases, it is due to the fact that the condition has existed for a considerable time, and, as a result of inactivity, a functional atrophy of those muscles has occurred.

In speaking of the treatment of hysteria, Russell Reynolds says, perhaps not altogether considerately, "No human being can cure, the physician can do but little for one who is born hysteric;" and Handfield Jones, relating a case of the same trouble, remarks, "It would clearly have been futile to give physic unless it was the 'infusum benedictum,' which often cured malingering soldiers, compounded of a weak infusion of tobacco and Epsom salts."

Dr. H. K. Oliver proposed a method of treatment of "aphonia from paralysis of the intrinsic muscles of the larynx" by compression of the wings of the thyroid, which, he says, he adopted, because "he took advantage of the valvular nature of the vocal cords," an anatomical fact demonstrated by Jno. Wylie, M.D., F.R.C.S., in a prize dissertation published in *The Edinburgh Medical Journal*, vol. xii. (Sept. 1866), where it was shown that the vocal cords when approximated constitute a valve opening outwards, while the ventricular bands form a valve opening inwards, and on account of this wedge-shaped space below the vocal cords the expired current of air can easily force the vocal cords apart, even when they are tightly closed, but that it will find effectual resistance at the false vocal cords (ventricular bands), where the ventricles will be inflated and the folds brought firmly into apposition. In inverse action, namely, in inspiration the air can easily wedge apart the false cords (vent. bands), whilst the vocal cords become the resisting bodies, and, as Dr. Oliver says, "it only seems necessary to start the machinery in paralysis of the adductors;" he suggests and gives several successful cases, where upon the arytenoids and vocal cords being approximated by compression of the wings of the thyroid, and the patient tried to sound the voice on quick, strong, and sudden inspiration, the power of phonation was restored and the voice was afterwards produced in the normal way.

This method I have occasionally adopted with success, and if other measures were used, have noticed that in hysterical aphonia the sounding of the voice first occurs, usually, if not always, on inspiration, and furthermore, in cases of true paralysis of the adductors the inspiratory effort to speak was decidedly more successful than the expiratory; but the extracts from Dr. Oliver's paper have been introduced because it seems that from them can be demonstrated that the condition he described and relieved in such a simple manner is not due to a paralysis, but to a perversion of the mental function, and therefore the most influential element for the successful treatment of the condition is that which appeals to the mind. It can

hardly be admitted that there is, properly speaking, a paralysis of the adductors when all that is necessary to call them into play is an inspiratory effort at phonation, but it is more probable that their action is in abeyance on account of the absence of the will-power to produce the normal movement, and after a few attempts the patient becomes impressed with the idea that it is impossible to speak aloud, and regards the condition as hopeless; when, however, a slight sound is made on the inspiratory effort, whether it be with or without compression of the wings of the thyroid, there is a mental encouragement to make the effort to speak which proves successful.

In addition to the reason given by Dr. Oliver for the ability to produce the voice on the inspiratory effort, it is probable that it may also be partly due to a stimulation of the superior laryngeal nerve, particularly calling into action its motor branch. Hilton says: "No matter how rapidly the nervous influence passes, it must reach the nearest point first, and that is apparently the reason why this little nerve takes so short a course to the crico-thyroideus. It has long been my habit to regard the crico-thyroidei as the muscles which are intended to tune the vocal instrument; and, as the instrument must be tuned before it can be played upon, so this nervous influence first reaching the crico-thyroidei, the vocal cords are put in a due state of tension, preparatory to the more precise and accurate influence of the other muscles acting directly and indirectly upon the vocal cords." He says, also, that if the principal motor nerve of the larynx took the same course, "we would all be ventriloquists, talking inwardly to ourselves," for it would act on the upper muscles sooner than the lower; and this is the way he explains why these nerves are always recurrent, though he says he has seen instances in the dissecting-room where they did not wind around the aorta or subclavian artery. The stimulation of the motor branch of the superior laryngeal may occur through the indirect influence of irritation or stimulation of the sensitive branch, and by its action on the crico-thyroidei muscles produce on the inspiratory effort a tension of the vocal cords which will also approximate them, and thus be an important factor in the sounding of the voice on inspiration, as it no doubt in a measure accounts for the sonorous whoop heard when air is being taken into the lungs, after the convulsive expiratory cough of pertussis, as Rosenthal has shown, according to Bartholow, and that this affection is due to irritation of the superior laryngeal nerve.

The large number of opinions of various authors which have been presented may not have been necessary; but it is believed that they all aid, either directly or indirectly, in establishing the fact that the hysterical neuroses met with by laryngologists are due to a perturbed psychical state, and only those symptoms which are entirely disproportionate to any local or general disease that can be detected, and the cause for which we believe to be mental, should properly be diagnosticated hysterical, if the conventional meaning of the word is accepted. The symptoms presented in

this condition are almost unlimited in number, being equalled only by the powers of imagination, and are divided into sensory and motor.

The sensory symptoms are anæsthesia, analgesia, hyperæsthesia, paræsthesia, and neuralgia, with the special sensory disturbances anosmia, hyperosmia, and parosmia.

The motor symptoms are hyperkinesis, paresis, akinesis, and chorea, or want of co-ordinated movements.

The second or neurasthenic class of cases differs from the first in that the condition is ordinarily associated with depression of the physical and mental powers, and the patient is usually, though not always, anæmic, and appears in a state of apathy which is rare in hysteria.

Since neurasthenia and spinal irritation are by the majority of authors considered synonymous terms, and as the symptoms are often described as the same as those of hysteria, perhaps the word will not carry the significance I intend it should, unless it is stated that under it I would include all those nervous affections, functional in character, of the throat and nose which occur without other obvious cause in persons who would be placed in what Rosenthal calls the depressed form of spinal irritation (neurasthenia).

These people are what is called "run down," and the nervous system alone may be affected or in association with an exhaustion of all the vital functions. The mucous membrane of the upper respiratory passage is frequently seen to be anæmic, and relaxed throat is common. The disease is gradually progressive, the symptoms are constant, not intermitting as in hysteria, and paresis, akinesis, and anæsthesia more often occur than hyperkinesis and hyperæsthesia.

Anæsthesia of the epiglottis has been stated to be pathognomonic of hysteria, and Hammond says that Chairou, in *Études cliniques sur Hystérie*, has shown that in all cases of hysteria the reflex excitability of the larynx is abolished, and that he, Hammond, "has in every case verified Chairou's statement." My own experience does not coincide with these observations, for I have frequently seen marked hyperæsthesia of the larynx in hysteria, but in almost if not quite all of the cases I would call neurasthenic I have noticed a diminution of sensation in the throat. The neurasthenic cases differ materially from the hysterical, and the two ought to be considered as nosologically distinct. In the one there is a depression of the cerebro-spinal nervous system frequently associated with a lowering of the general physical condition, and in the other the state of the general health may be good, and the nervous system exalted as far as its general functions are concerned, only showing some local disturbance which is due to a morbid psychical state, but without perversion of the ordinary mental functions. Relief will not be obtained in one case by treatment which would be most effective in the other; therefore when a patient who has a functional nervous disorder of the throat applies for

treatment, even though it be a young woman who has some menstrual irregularity, the question must be considered whether the symptoms are due to an abnormal mental influence or to nervous asthenia before it is classed as hysterical or neurasthenic, and before it is decided whether it will most probably be benefited by treatment which will have an effect on the mental and moral tone, or whether good hygienics, tonics, and nervines will be most potent for the relief of the condition. That hysteria sometimes occurs in persons who are suffering from nervous exhaustion goes without saying, but the application of the term hysterical to all functional nervous affections of the throat occurring in subjects of neurasthenia can hardly be considered satisfactory.

Miss S., of West Virginia, represents fairly well this class. She was the eldest daughter of a widower, and on her devolved the duties of housekeeping and supervision of the family. The many cares incident to these duties she undertook when about eighteen years of age, but after three or four years her health was noticed to be failing, and later on she lost her voice, so that she could not speak aloud. She was brought to the city to be under my care, and on examination it was seen that she had relaxed throat with paresis of the vocal cords. On attempted phonation, there was but slight approximation of the cords, and only a feeble whisper was produced. She was treated for one month with iron and other tonics and nervines, and the local application to the throat of solution of ferri perchlor. and galvanism externally and internally. Before she returned home she had improved greatly in general health, and had regained her voice absolutely.

The two points which are quite distinctive of this case are that the loss of voice was gradual for some months, *pari passu* with the failing of her general health, and, after being unable to speak aloud for several months, when treatment was adopted for the improvement of her condition, none of the measures used at any time suddenly restored the natural tone of the voice as occurs in hysteria, but in the course of the month she was under treatment, it became stronger by degrees until finally the normal tone was regained. She returned to her home in Nov. 1882, with directions to continue the use of the same line of remedies that have been indicated, and two years afterwards I learned that she had retained the voice and had no trouble with her throat, which I have no doubt is her present condition, as I have heard nothing to the contrary.

The third class is called the "Reflex Irritative," though perhaps better names might be given to these different varieties of cases. Here the throat affection is dependent on an excitation or injury to either the cerebro-spinal or sympathetic nervous system.

The symptoms presented are cough, spasm, or paralysis. The treatment of this form differs from the others in that in the hysterical neuroses it should be directed to the mind, in the neurasthenic to the nervous

system, and in these cases all the remedial measures must be directed towards that part of the human economy in which the source of irritation is found to arise. For many years the laity have been familiar with the term "stomach cough," which in some instances is correctly named, but more recently laryngologists have given considerable attention to this subject, and have shown that many neuroses of the throat originate in irritation in the ear, the nose, the stomach and bowels, the genito-urinary apparatus, as well as from intra-thoracic disease of the heart or pericardium, the aorta or subclavian artery, the lungs or pleura, and from mediastinal tumors, also from goitre and enlarged bronchial glands, and during the past year Gouguenheim and Leval-Picquechef have demonstrated that some of the neuroses of the larynx, about the etiology of which there has been much uncertainty, are due to disease of a little chain of lymphatic ganglia situated along the trachea from the larynx to the bifurcation. In the report which they make, the following sentences occur.

"The study of this part of the lymphatic system is interesting then, not only for the anatomist but also for the clinician, because these ganglia may play a grand rôle in the functional troubles of the larynx, vocal or respiratory. They become hypertrophied in a number of cases, and, however little excessive the development may be, the recurrent nerves, to which they are very proximate, are compressed by them, and this compression gives the key to frequent functional troubles which are far from being proportionate to the laryngeal lesions. One of us has already observed in this region the fact of the compression of the two recurrent nerves by the greatly hypertrophied and degenerated lymphatic ganglia, and the compression has enabled us to explain very grave respiratory troubles which had necessitated tracheotomy."

Among the conclusions of the paper we find that

"The description of these ganglia was based on twenty dissections in normal and pathological conditions. These ganglia form a chain composed nearly always of three groups. The *inferior*, the most constant and voluminous, is almost continuous with the mediastinal ganglia; the *middle* is less constant than the inferior, and is composed of extremely small ganglia which are often lost to view; the *superior* group is situated at the posterior and inferior portion of the larynx. It is perhaps less constant than the middle, and is also composed of extremely small ganglia. The ganglia are susceptible of becoming hypertrophied and of attaining a considerable size in tuberculosis, in cancer, and perhaps also in syphilis.

"The autopsies made were principally in tuberculosis, rarely in cancer, and never in syphilis.

"The hypertrophy was most marked of the inferior and superior groups. The symptoms of compression of the nerve are either paralysis or spasm."

The value of these investigations seems to me to be very great, especially in pointing out the probable explanation of the dry, irritative spasmodic cough and occasional loss of voice which frequently precede, by some months or even years, any evidence of phthisis pulmonalis that can be detected by physical methods of examination and under these circumstances, or, if the lungs ever become affected secondarily to the throat disease, as I am disposed to believe from a clinical observation and treatment of not less than 5000 cases of phthisis during eleven years' special practice

in throat and chest diseases, then, the early diagnosis of tuberculous deposit in the peri-tracheo-laryngeal glands should be of very great importance in the prophylaxis of phthisis pulmonalis.

Begbie states that Dr. Graves, of Dublin, directed attention to the frequency with which various nervous affections are due to reflected nervous irritation, and that "he graphically describes the sudden and complete relief afforded to a young lady who had suffered most severely from spasmodic cough, after the discharge of a tapeworm, which had been effected by a large dose of oil of turpentine and castor oil."

In the same article, speaking of spasm of the pharynx and œsophagus, Begbie says: "It is of common occurrence, particularly in females, in whom it shows itself either as a reflex phenomenon dependent on uterine irritation, or—and this still more frequently—as one of the most striking features in a paroxysm of hysteria."

A distinction is here made between a reflex throat neurosis produced by uterine irritation and an hysterical neurosis. This I have before alluded to, but it is a differential diagnosis rarely made by the profession, for generally when the uterine disorder has been discovered the functional trouble is classified as hysterical. Another interesting reflex neurosis is where there is bilateral paralysis of the adductors from pressure on the recurrent of one side, which Flint states Dr. Geo. Johnson called attention to in 1875, and of the correctness of whose observation he (Flint) had an example in a case where there was an aneurism of the descending portion of the arch of the aorta pressing on the left recurrent laryngeal nerve, in which both lateral adductors of the vocal cords were paralyzed.

In fact, instances of these reflex neuroses, as well as of the hysterical and neurasthenic, could be given in great number and many of them might prove interesting; the scope of this article is not intended, however, to be exhaustive or didactic, but merely suggestive, and enough has been said to present the subject for consideration; the writer will, therefore, close with the statement that he has no doubt that it could have been made more interesting, but that in it he has presented data from the experience of others as well as his own with especial reference to defining more clearly, for diagnosis and successful treatment, the different forms of functional neuroses of the throat and nose.

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ARTICLE X.

HISTORY OF A CASE OF TWICE-PERFORMED CÆSAREAN SECTION, UNDER THE LATE PROF. WILLIAM GIBSON; WITH AN AUTOPSY OF THE PATIENT MADE FIFTY YEARS AFTER THE FIRST OPERATION, BY Drs. CALEB W. HORNOR and ROBERT P. HARRIS, of Philadelphia. Reported by ROBERT P. HARRIS, M.D.

IN August, 1835, there appeared in this JOURNAL a report by the late Dr. Joseph G. Nancrede, of a Cæsarean operation performed with success to mother and child, on March 25th of that year, by Prof. Gibson, of the Chair of Surgery in the University of Pennsylvania. As this was the first operation of the kind in Philadelphia, its successful termination made the case the town-talk among physicians, and very naturally also among the matrons of the city, which then contained less than one-fourth of its present population.

Again, in this JOURNAL for May, 1838, there appeared a second report of a similar character, written by the late Dr. George Fox, concerning the same operator, and the same patient, showing that she had been again delivered with full success under the knife, on November 5, 1837. These two operations saved a daughter and son, who were, in their early childhood, shown annually to the medical class of students in the University of Pennsylvania by the late Prof. Hugh L. Hodge, when he lectured upon "Gastro-Hysterotomy;" and many now living will remember the mother and her attractive little ones, and how they estimated her bravery in submitting (for there were no anæsthetics in those days) to this painful operation for the saving of her children. Not only did these children live to maturity, but the first is still living, the son having died of consumption on October 4, 1881, when nearly 44 years old.

The patient, Mrs. Reybold, died on August 15th, 1885, aged 76 years and five months. She had been declining in strength for a few years, and died from the failure of her digestive functions, her mind being clear until the last. She has thus outlived the nine physicians who were present at her first operation, and the four who, with the two Gibsons, made up the corps at the second, all of whom, with the exception of the operator, graduated in the University of Pennsylvania from 1806 to 1836. Among those present we will mention Prof. William P. Dewees, Prof. William E. Hornor, Prof. Charles D. Meigs, Prof. Hugh L. Hodge, Dr. George W. Norris, and Dr. John Dove, of Richmond, Virginia.

Mary H. was born in Ireland on March 15, 1809; came to America in early childhood, and became Mrs. Reybold on May 16, 1830, at the age of 21; and a patient of Dr. George Fox in June, 1831, when fully matured in pregnancy. It was then discovered that her skeleton bore unmistakable marks of rachitic disease, and that her pelvis had been much deformed thereby. This was attributed to a fall in her second year,

after which she was not able to walk for two years or more, but finally regained her health. Finding the difficulty in her case, Dr. Fox called to his aid Prof. James, Dr. Thomas T. Hewson, Dr. J. Rhea Barton, Dr. Chas. D. Meigs, and Dr. Lukens. The consultants decided "that the antero-posterior diameter" of the superior strait "was certainly not more than two inches, and *probably not more than one and three-quarters.*" The Cæsarean operation was proposed, but was decidedly opposed by "some of the most distinguished surgeons" present, under a conviction that it would be almost necessarily fatal to the mother. After a labor of sixty-four hours, and the fœtus being already dead, Dr. Meigs perforated its head, but was not able to deliver it with any of the appliances then in use. He was forced to delay until putrefaction had softened the fœtus before he could remove it, which was not until thirty-three hours later. By this time Mrs. R. was much exhausted and narrowly escaped death. It was the opinion of those present during the delivery, that the Cæsarean operation would have been better and attended with no more if as much risk. Dr. Fox was called to the labor on June 14th, and it was not completed until the night of June 17–18th. At the next morning visit her pulse was 112, and the following, 94. After this she made a good recovery.

Before her next labor, Dr. Meigs had invented his "embryulcia forceps," and as she would not consent to the bringing on of premature labor, or submit to the Cæsarean operation, he was forced to destroy the fœtus, and reduce the size of its head, which the instruments enabled him to do so readily that delivery was accomplished in two hours. This took place on June 23, 1833, and the delivery was commenced early, as Drs. Fox and Meigs believed that upon the previous occasion Mrs. R. had narrowly escaped death by exhaustion. Dr. Fox was again the accoucheur, and Dr. Meigs the consultant in the case. The illustration in Prof. Meigs's work upon Midwifery, in which he shows the use of his bent forceps in this case, is incorrect as to the direction of the spine and sacrum, as will be shown hereafter. He has made the pelvic collapse anterior, when it was posterior, at the sacro-vertebral angle, of which he was perfectly aware, as he says she had a deep hollow at the base of the sacrum. Dr. Meigs told Mrs. R. that he would not destroy another child for her in the event of her becoming pregnant, and that she would have to submit to the Cæsarean section.

In September, 1834, when three months pregnant, Mrs. R. placed herself under the care of the late Dr. Joseph G. Nancrede, who called in the counsel of the late Dr. Francis S. Beattie, and it was finally determined to deliver by the Cæsarean section, under Dr. Gibson, who, with several others, was consulted about the case. When in labor, on March 25, 1835, it required two hours' waiting and urging, with the aid of her father confessor, before she would consent to submit to the operation. Dr. Gibson and party were then called up, and the operation performed after a labor of twelve hours. With regard to this operation, we have only to say that the abdominal incision was six inches long, that the membranes were unruptured, and that the fœtus presented by the breech. The waters were discharged through the wound, and the uterus was allowed to depend for safety upon its own contractions. The operation lasted about ten minutes, and the patient's pulse was 80 after a short rest.

On the 29th there were evidences of a moderate peritonitis; pulse 110; no tympanites, but tenderness on pressure low down in the abdomen, and

pains in the iliac regions. This pulse of 112 continued for four days, during which time she was bled f℥viij on two occasions, and forty leeches were applied (probably American, counting f℥j to six or eight); she was likewise purged on the 31st. Her pulse now very gradually fell to 84, which it reached at the end of the third week; she sat up in twenty-eight days, a small sinus still remaining in the abdominal wound, which was perfectly cicatrized by June 1st. These points have an important connection with what we found on autopsy.

During the fourth pregnancy of Mrs. R. the services of Dr. Fox were again called in requisition, it being understood that she would submit to a second Cæsarean operation if required, and she was placed upon a milk and farinaceous diet in preparation. When summoned to attend her in labor, she was found excited, with a pulse of 116, and not in as favorable a condition as upon the preceding occasion. Her abdomen showed a cicatrix of five inches in length, which was hard, dark-colored, and puckered; the uterus was anteverted, and "adhesion had apparently united the integuments and uterus for a space of four or five inches from near the pubes up towards the umbilicus." The child was ascertained by the ear to be alive. The section was made on November 5, 1837.

Prof. Gibson was again the operator, and was assisted by Drs. Fox, Norris, and Meigs. He cut directly in the line of the old cicatrix, "from an inch and a half below the umbilicus nearly down to the pubes." "The uterus was found connected with the integuments by strong adhesions, for a space of about four inches; the incision into this organ was made near the fundus, and extended down five or six inches; that portion that was adherent was much attenuated, being scarcely one-fourth of an inch in thickness." The operator dissected up the adhesions until a knuckle of intestine protruded, when he computed the union at half an inch in width. The placenta was immediately under the line of incision, and the delivery gave rise at first to considerable hemorrhage. The boy extracted was of full size, but very feeble, and his respiration was for some time quite imperfect. The abdominal wound was closed by six sutures, adhesive strips, a compress and binder. Time in labor 10 hours; pulse before operation 112, and immediately afterward 96.

Mrs. R. made a good recovery after the second operation, and had a pulse of 84 in twelve days; there were no symptoms of peritonitis. She was able to nurse her infant, and sat up in twenty days; the wound entirely closed by February 10, 1838, there having remained a fistula, as after the former operation.

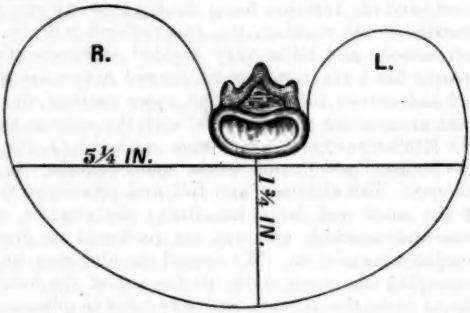
The reporter became acquainted with Mrs. Reybold on April 1, 1878, and believing that all who had written about her were in error as to her height, had her carefully measured by her physician, the late Dr. William F. Patterson, who ascertained that she was not 4 ft. 6, but 4 ft. 8 inches in height. She said that the second operation through the old scar was particularly severe, that this spot was always sensitive, and that she felt a drawing sensation in it. She was unusually straight in her dorsal spine and neck; sat very erect without support, and bore no evidence of any deformity when dressed; she walked slowly, and did not lift her feet well. When Dr. Fox was asked to attend her in her first labor she was 22 years old, and he a graduate of three years' standing; he had no suspicion of her conformation until he saw her actually in labor some weeks later. She promised on one occasion to leave him her pelvis, but being her senior he did not live to get it. He died on Dec. 27, 1882, aged 76, and, if

we are not in error, was the last survivor of the thirteen doctors who were present at the first and second operations collectively. Little did the nine physicians and surgeons at the first operation dream of the possibility of the small patient under the knife outliving them all. She was always under the opinion that Dr. Nancrede starved her, which he was forced to do; and was particularly grateful to Dr. Fox, who from her condition was able to feed her more generously after the second operation.

Autopsy.—Several years ago Mrs. R., by removing to the mansion of her daughter, came directly under the care of Dr. Hornor, and we agreed, in the event of her death in our time, to ask for and make an autopsy with special reference to her pelvic deformity and the attachment of the uterus. In a few hours after her death, two days ago, Dr. Hornor was kind enough to call upon me, and the remains being brought to the city we proceded to the examination in the evening, ten hours after her death. We found in the humeri femora and tibiæ very decided evidences of rickets; the arms being partly bent, the ossa femora curved antero-laterally, and the tibiæ flattened and curved forward. The upper parts of the thighs were very prominent at the sides of the pelvis, and the sacrum made quite an angle with the lumbar vertebræ, which were marked by a deep depression. There was no unusual prominence in the mons veneris, which was long, wide, and adipose. The abdomen was full and prominent from flatulent distension of the small and large intestines; the cicatrix made by the operations was well marked, but was not puckered or drawn in as if under any tension from within. We opened the abdomen by an inverted ⊥ incision, carrying the vertical cut to the left of the umbilicus and to the ribs, so as to avoid the cicatrix and any uterine adhesion that might exist. We found very decided evidences of the attack of peritonitis that followed the first operation, in the form of strong bands uniting the omentum to the abdominal wall, and the latter to the large intestine, one fan-like attachment to the angle formed by the ascending and transverse colon being particularly conspicuous. We also noticed the evidence that the incision had been carried to within half an inch of the pubes, in the formation of a dense cicatricial band in the seat of the linea alba, which was covered by skin showing but little evidence of having been incised. Four of the cicatrices made by the sutures were very conspicuous, being long and depressed; three inches apart in vertical measurement, and four and a half inches across the abdomen. Under the upper part of the abdominal cicatrix was a long band of tissue of a pale red color, having an intimate attachment to the same for about two inches in length, and extending on either side for about one inch in entire width. This band was entirely free below and passed down into the pelvis. It was soft, flat, smooth, and very much of the form of the tongue of a small dog. Upon carefully tracing this we found it to be the fundus uteri elongated to 4½ inches. The ovary on either side was at the brim of the pelvis, and these organs were small, dense, white, long-oviform, and about the size of a large pea-nut kernel. The upper part of the vagina and the cervix, after a half century of tension, felt like a hard cord of the size of the index finger. Union must have taken place from adhesive peritonitis between the fundus uteri and the upper part of the abdominal wound, soon after the completion of the first operation, before the uterus had fairly advanced in involution, and have become so dense in character by the subsequent attack as to prevent the organ from ever regaining its normal size and form, although it did not prevent a second impregnation. As Mrs.

R. ceased to bear children at the age of 28, although she menstruated, it is possible that this strain upon the uterus may have had something to do with her remaining unimpregnated.

The deformity of the pelvis was very much such as we expected to find it, except that the true conjugate was the smaller of the two measures given at the first consultation called by Dr. Fox in 1831, viz., $1\frac{3}{4}$ inches. The sacro-vertebral angle was very prominent, and the curve made by the two pubic bones in the linea-ileo-pectinea wider than normal. The pelvic brim in front was represented by a wide arch, and the whole edge of the brim of the true pelvis was very smooth and round without any inequalities. The transverse diameter carefully taken measured $5\frac{1}{4}$ inches. A



measure carried in perpendicularly so as to avoid the promontory of the sacrum showed that this bone had a very deep concavity, which must have favored the use of instruments and the hand in extraction. My hand with the thumb and fingers extended and drawn together could be passed downward through the superior strait on the right side of the sacral projection but not on the left, which was of the same form but decidedly more contracted. This difference of development somewhat affected the whole of the left lower extremity, which was weaker and rather more ill-shapen than the right. The first fœtus of all, which was removed after putrefactive softening, was probably extracted through the right passage, although on the other side there was as much space as existed in some well-known cases where the same measure was adopted, as for example that of Elizabeth Sherwood, delivered by Dr. William Osborn, of England, after a labor of 72 hours, requiring 3 hours' traction; the woman recovered.

The superior strait of Mrs. Reybold's pelvis marks it as one of the "*reniform*" variety, but it differs from many of this type in the fact that the sacral indentation is much more decided, the circumference of the brim longer, and the side passages more round and larger. To deliver a fœtus through such a pelvis in two hours, more than half a century ago, was a decided feat on the part of Prof. Meigs, and it is equally creditable to him that he refused to repeat the operation; for the next presentation proving to be one of the breech, the destruction and decapitation of the fœtus would probably have been fatal to the mother before the head could have

been extracted. Who that has seen this woman with her grandchildren and great-grandchildren could have condemned Dr. Meigs and those associated with him when they decided against craniotomy and in favor of gastro-hysterotomy?

The case of Mrs. Reybold is not simply a curiosity of surgical experience. That she twice recovered is not so remarkable, when we consider that five other women in the United States have done the same thing, and that one of these has now a daughter and son, living with her in Toledo, Ohio, all three being in good health, and with quite as fair a prospect of long life as she had. This Toledo mother is 39 years old, her daughter 10, and son 5 years. The danger in these cases is mainly after the first operation, except in those where the mother has fallen into bad health, as occurred in two instances in the United States. A third woman died after a third operation, from the same cause. The lesson to be learned from these recoveries under the first operation, and from others that have been operated upon once only, and with full success, is that it is all-important to give relief to the patient as early as possible. Mrs. R., by reason of her own opposition, lost more than two precious hours before the first operation, and made a very narrow escape from death by peritonitis. She was exceedingly fortunate in being under the care of Dr. Nancrede, who had had an experience of twenty-two years, lived in the heart of the city, and was a leading accoucheur. It was through his determination, after a careful investigation of the subject, and Dr. Gibson's willingness to operate, that the work was finally done. The celebrated surgeon, Philip S. Physick, had been offered the honor in a former pregnancy, but declined, fearing a fatal result. Dr. George Fox would have operated on the second occasion, but being still young in the profession, feared the expression of public opinion, in the event of a failure to save the patient, after the former success under another. This I was told by his nephew more than forty years ago.

In looking over the eight cases upon which the Cæsarean operation was performed twice, and in one instance three times, I find that promptness in action was a noted feature in the cases where the fœtus was saved. Thus the two Scudday operations were after 12 hours, and "a few hours." The Mills operation on a dwarf of 3 feet 9 was after a labor of only 4½ hours; the Newton case after 6 or 8 hours, and the Toledo operations after 7 hours and 3 hours respectively. The Merinar second operation was also "early;" the baby perished in the first labor. Had the first Gibson operation been several hours earlier, the patient might have made a much more rapid recovery. The Toledo operations were the only ones of the seventeen in which the uterine wound was sutured, the other fifteen dating prior to 1867, when this manner of treatment was revived with success in New Haven by Dr. T. Beers Townsend, and in New Orleans under Drs. D'Aquin and Brickell.

With the great advantages we have now over what existed in the days of Dr. Gibson, we ought to be able to save a larger instead of a less proportion of cases but for the fact that rachitic women are generally poor, and do not put their cases in the hands of Nancredes or Foxes in education and medical training.

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ARTICLE XI.

INFLAMMATION OF THE ATTIC OF THE TYMPANUM.[1] By SAMUEL SEXTON, M.D., Aural Surgeon, New York Eye and Ear Infirmary.

INFLAMMATION of the middle ear is subject to certain limitations due to its anatomical construction, especially of its osseous boundaries, and that arising in the attic is, owing to its sequestration, usually of much more significance than the form which begins in the atrium. This form of disease has not, it is believed, hitherto received the attention its importance demands; indeed, in its early stage, it is likely to escape observation altogether if examination of the ear be limited, as it very often is, to an inspection of the membrana tympani only, since this membrane may not at any stage of inflammation of the attic be greatly or at all affected.

Inflammation of the *atticus tympanicus* may be considered under two forms—acute and chronic. The latter having attracted the attention of writers before the former, I shall first review what has been written about it before considering the acute form.

Chronic inflammation of the attic presents itself frequently in the form of a deep sinus, containing, sometimes, either pultaceous matter or inspissated pus, sometimes polypoid tissue or epithelial crusts, leading through the membrana flaccida or inner extremity of the external auditory canal up into the attic—and frequently from thence into the antrum. Sometimes the membrana flaccida and ossiculæ are missing in these cases, and we find that the margo tympanicus of the auditory plate is covered by cicatricial or granulation tissue, and that a large cavity extends beyond, which may be explored with a bent probe. Again, in other cases, the membrana flaccida remains, together with the incus and malleus, and even a portion of the membrana tympani; these, from thickening of the tissues, may obstruct drainage from the attic by narrowing the outlet from above. Any of these chronic processes may last for many years; I have seen such pathological tracts or cavities in very old people, a result of

[1] Read before the American Otological Society, July 14, 1885.

acute inflammation of the attic in early life. Troeltsch, who observed these sinuses twenty-five years ago, believed that they were due to perforation of the roof of the external auditory canal in cases where the cellules sometimes extending over this region were the seat of disease. That their origin may be thus explained in some cases I have no doubt, but more frequently they depend on perforation of the membrana flaccida. Subsequently this condition of things attracted the attention of others; several cases came under the observation of Dr. J. O. Green, who, under the head of "An unusual variety of purulent inflammation of the tympanum," described them in the *Boston Medical and Surgical Journal*, March 6, 1874. He regarded the trouble as beginning with a catarrhal inflammation, which afterwards became purulent, and to a greater or less extent involved the entire tympanum—"but the mucus secreted among the ligaments and other structures in the upper part of the tympanum is unable to gravitate to the floor of the cavity on account of its confined position." Both Drs. C. H. Burnett and C. J. Blake reported cases at the meeting of the American Otological Society in 1874. Subsequently the latter drew attention to acute invasions of the upper part of the tympanum (*American Journal of Otology*, April, 1882), observing that the tympanum becomes inflamed during the first few hours, at the furthest in twenty-four hours, and that when the membrana tympani was opened it gave vent to a copious serous discharge. He seems scarcely to have considered the affection as arising altogether independently of the atrium of the tympanum, a view also seemingly accepted by Buck, who states in his book on the ear that purulent matter escapes through the membrana flaccida in acute purulent inflammation of the tympanum, because less resistance is offered in that locality.

Before considering the acute form of inflammation of the attic, as observed by myself, and for some years demonstrated to my students at the New York Eye and Ear Infirmary, I beg to allude briefly to some points concerning the anatomy of that portion of the ear under discussion, which, for the most part, lies immediately beneath a wide triangular plate of bone on the anterior surface of the petrosa, known as the tegmen, consisting of the attic, antrum, a varying number of cellules, and the Eustachian tube.

"The *attic*[1] of the tympanum is a pyramidal recess over the atrium, and above the tympanic orifice of the external auditory meatus. Its upper anterior boundary is the tegmen, which separates it from the cranial cavity, and is mostly provided with a layer of spongy substance of variable thickness. Its inner boundary is a convex prominence (Fig. 1, *e*; Fig 2, *b*), produced by the contiguous portions of the external semicircular and facial canals. Its outer boundary is the wide crescentic tympanic scute (Fig. 1, *b*; Fig. 2, *c*) of the auditory plate. It opens above the prominence of its inner boundary, outward and backward, by a large aperture[2] into the mastoid antrum.

[1] "Atticus tympanicus, upper chamber of the tympanum of Huxley."
[2] "Petro-mastoid canal of Sappey."

Fig. 1.

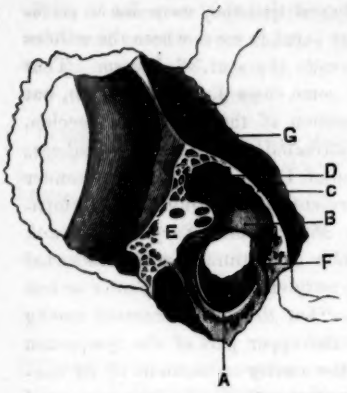


Fig. 2.

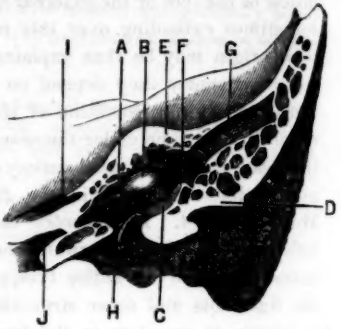


Fig. 1 (Leidy).—View from within of the outer portion of the left temporal bone, sawed through the tympanum, fore and aft, parallel with its inclination. *A*, tympanic margin of the external auditory meatus, formed below and at the sides by the grooved margin of the tympanic plate, and above by the margin of the auditory plate; *B*, scute, forming the outer boundary of the attic; *C*, tegmen; *D*, mastoid antrum; *E*, prominence of the inner posterior boundary of the attic; *F*, canal for the accommodation of the long process of the mallet; *G*, petro-squamosal fissure. Below *E* are seen the pyramid and the aperture of the tympanic cord.

Fig. 2 (Leidy).—Section of the left temporal bone through the squamosa, immediately in advance of the external auditory meatus. *A*, atrium of the tympanum; *B*, prominence on the inner back part of the attic; *C*, scute at the outer part of the attic; *D*, auditory plate; *E*, tegmen; *F*, mastoid antrum; *G*, anterior passage of the same; *H*, canal for the long process of the mallet; *I*, hiatus of the facial canal; *J*, Eustachian tube.

"Beneath, it opens into the atrium by an elliptical aperture, formed internally by the ridge of the facial canal, and externally by the tympanic margin of the auditory plate. . . .

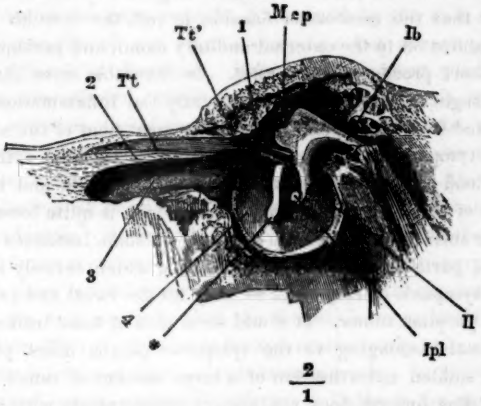
"The *mastoid antrum* (Fig. 1, *d*; Fig. 2, *f*) is a prolongation of the attic backward and outward in the spongy substance of the mastoidea. It is of variable size, ordinarily ranging from that of the attic to double the dimensions of this. It sometimes ends in a blunt, flask-like recess, but is oftener more or less extended downward among the cellules of the mastoid process. Frequently it gives off a smaller fork or passage (Fig. 2, *g*), which is directed outward and upward among the cellules above the external auditory meatus; and rarely a third branch is directed more anteriorly. While the atrium of the tympanum varies but little in size, the attic and mastoid antrum vary greatly."[1]

If now we carefully remove the *tegmen* in the recent subject, and look down upon the parts thus exposed to view, we shall find the attic and antrum *in situ*, and everywhere lined with mucous membrane. The attic is divided by the incus and malleus, which are placed across it fore and aft, into an outer and inner apartment; they only partially occupy it, and the long process of the former and the handle of the latter project down into the *atrium*. The two attic apartments, of which the inner is much the larger, communicate freely with each other overhead, with the atrium

[1] The anatomical description above is from Leidy, *Science*, May and June, 1883.

below, the Eustachian tube in front, and the antrum behind. The outer apartment is wedge-shaped, wider above and gradually becoming narrower below, where the body of the anvil and neck of the mallet lie almost in

Fig. 3.



View from within of the right tympanum and contiguous parts. From Henle. *Tt*, *Tt'*, tensor tympani; *Mεp*, head of the hammer; * handle of the same; *Ib*, short, *Il*, long process; *Ipl*, lenticular process of the incus; *I*, chorda tympani; 2, septem tubæ; 3, tube; 4, drumhead.

contact with the margin of the auditory plate. The bottom communicates anteriorly and posteriorly with the atrium by a very narrow slit.

The inner apartment communicates much more freely with the atrium, but the passage is contracted by the prominence before alluded to on its inner wall, the impingement of the anvil and mallet, and the cord, ligaments, and folds of mucous membrane. (See Fig. 3.)

Acute Inflammation of the Atticus Tympanicus.—This may occur from catarrh of the head, due to exposure or consecutive to the exanthemata, and to the entrance of fluids propelled along the Eustachian tube in bathing or from the use of the nasal douche. It happens very often that the attic only is affected from these causes. This can readily be understood when it is kept in mind that the tympanic orifice of the Eustachian tube opens by a free sweep into the attic as well as into the atrium, and that fluids traversing the canal with considerable momentum would follow the upward sweep of the tympanic embrasure rather than gravitate downward. Moreover, the presence of irritating fluids seems to be much better borne in the lower than in the upper part of the tympanum. Inflammation of the attic may develop consecutively to inflammation of the atrium, and, of course, both may be affected simultaneously.

Inflammation of the attic is a much more serious affair than that of

the atrium alone, because of the swelling of the mucous membrane which closes up the outlets and thus prevents drainage.

Inflammation of the attic is usually ushered in by more or less pain. As the disease advances the outlets are more or less closed, and the escape of secretions is thus interfered with. It will generally be found on examining the ear that the membrana flaccida is red, the vascular turgescence extending above on to the external auditory canal, and perhaps downward about the short process of the mallet. In favorable cases the regressive stage may begin at this time, but frequently the inflammation which was thus extended from the bottom of the outer apartment of the attic beneath the margo tympanicus of the auditory plate is attended with effusion of serum or blood; this raises up the membrana flaccida and the adjacent integument of the external auditory canal, which is quite loosely attached to the outer surface of the auditory plate. In some instances the bulging out of these parts is sufficient to form a sac which entirely conceals the membrana tympani, or may even entirely fill the canal and present at the lumen as a purplish tumor. It would seem that in some instances rupture of bloodvessels belonging to the tympanic plexus takes place, giving rise to the sudden extravasation of a large amount of sanguineous fluid. The tumor thus formed does not always communicate with the attic at first, although later on it may do so.

In a certain number of cases of inflammation of the attic, drainage continues through a small perforation in the membrana flaccida, a nipple-like outlet forming which may easily be mistaken for a polypoid growth; indeed, a polypus may subsequently develop from the mucous membrane presenting at this opening.

In a certain number of cases periostitis is present in a marked degree, affecting the neighboring parts; where it extends outwardly, the canal is red and glazed in appearance, but not so much swollen as in the cases above described. The periostitis is liable to spread itself outwardly over the auditory process, and thence along the surface of the mastoid or squamous surfaces of the temporal bone.

Inflammation may also extend downward into the atrium, producing characteristic symptoms in this part of the tympanum.

As long as the membrana tympani and the atrium are unaffected there is comparatively but little deafness, although autophonia may be present.

In nearly all of these cases the inflammatory process in some degree extends inward and backward along the petro-mastoid canal into the antrum; it may advance thence into the mastoid cellules or those lying above the external auditory canal or in the tegmen. When the escape of secretions into the atrium or Eustachian tube is prevented, the case is usually much more severe. It is in these cases that extension to the cranial cavity is most likely to occur. In children the imperfect closure of the petro-squamosal suture affords a much more easy invasion of the

cranial cavity, and in adults even this often is a weak point. The antrum may remain in a diseased state after all tympanic trouble has abated, and both the membrana flaccida and membrana tympani have closed, drainage taking place through the Eustachian tube, or by means of a sinus out through the cortex of the mastoid.

The gravity of the case must be determined by the pain experienced and the appearance of the organ—symptoms not always sufficient to establish a differential diagnosis. Pain is often absent where the attic and antrum are affected, whilst in periostitis externa it is frequently severe; its presence, therefore, may in many instances be regarded as rather a question of temperament, at least as regards the tolerance of suffering, than as indicating the extent of the disease. Moreover, it is difficult to distinguish between the pains of middle-ear disease and those of pachymeningitis. As regards the physical signs, when the membrana flaccida and inner superior wall of the canal are red and angry in appearance, whilst there is tenderness over the mastoid or at the attachment of the auricle, we may conclude that the disease is most likely to expend its force externally; if pus makes its appearance early at the membrana flaccida, there is less probability of extension inwards. In young children, or in subjects of ozæna, periostitis externa is liable to be succeeded by caries of the temporal bone which may extend itself down into the antrum. The purulent matter escaping from the attic through the membrana flaccida or from a mastoid sinus in cases of ozæna is characteristic of this disease.

A consideration now of the treatment of inflammation of the middle ear from the writer's point of view need not include the generally accepted methods, but only such as have not, perhaps, been so extensively tried by others. The more serious cases met with occur usually from neglect or maltreatment in persons run down from some cause, and fixed rules for guidance in such cases cannot be made. It is my practice to administer remedies reputed to control inflammatory and purulent action in all cases; relying upon minute doses of mercury in inflammation of mucous surfaces until purulency threatens, when the calx sulphurata is indicated. Pain and vascular excitement may be controlled by aconite, belladonna, pulsatilla, gelsemium, and other remedies. In certain cases much relief may be obtained, or even a cure may result, by removing secretions from the attic through the Eustachian tube, a successful case of which I reported in the *Lancet*, October 18, 1884.

Where the above means, together with the local treatment to be mentioned further on, have been resorted to early, I have never met with a fatal result, and grave symptoms have been much less frequently encountered than when local measures only were employed. In the local treatment where there is simply redness of the membrana flaccida, due to acute catarrhal inflammation, a regressive course is soon established in

many cases and any local interference is inadvisable. Where there is periostitis of the canal, incisions often do harm, but where catarrh advances to the purulent stage, the symptoms may become more urgent and the employment of the knife demanded. Unless a sac containing sanguineous matter or pus has formed, and is connected by a sinus with the attic, it will be useless to cut down upon the inner end of the canal or the membrana flaccida, because the knife cannot be thrust through the auditory plate underneath. Vent to secretions in the attic may be assured in some cases by introducing the myringotome through the upper edge of the membrana tympani and behind the long process of the incus. The danger of wounding the chorda tympani nerve is considerable in this operation, and incurrence of the risk would only be justifiable when symptoms were urgent.

When purulent matter forms in periostitis externa, after Wilde's incision drainage can be maintained best by the employment of two or more thicknesses of catgut. This has the advantage of being easily introduced folded end foremost and is not so irritating as most dressings. Where a sinus enters the antrum or cellules, this dressing permits free drainage, and if the number of folds be gradually increased the opening may be enlarged to almost any desired extent. This seems to aid greatly in the disappearance of minute sequestra. The catgut should be changed as often as once or twice daily. I am indebted to Dr. Thomas M. Markoe for the suggestion of the surgical use of catgut.

Where inflammation has extended to the antrum, either from without in consequence of caries due to periostitis externa, or along the petromastoid canal from the tympanum, the surgical aspect of the case may become paramount. From my own experience an extension of the diseased process from the attic is a common occurrence and usually calls for no special interference. But in neglected and otherwise unfavorable cases drainage must be secured whether we have to deal with middle ear disease or any of its complications. Ineffectual operative procedures here needlessly torture the patient without accomplishing the end in view; an operation for the relief of pachymeningitis might thus be tantamount to trephining because of the pains of middle ear disease, a procedure which at best would not probably liberate the products of inflammation of the dura even if any were present. I cannot, therefore, from this point of view, regard trephining the mastoid as other than a means of drainage, not likely to affect the course of pachymeningitis or cerebral abscess.

There is, of course, a wide and honest difference of opinion in respect to the method of securing drainage in purulent middle ear disease, but the writer is constrained to believe that on the whole there is over-much energy manifested in accomplishing this object.

Observation continued since this question was last discussed before this society confirms the belief then held that we may often avail ourselves of

the tendency manifested by the pent-up products of inflammation to escape through the posterior wall of the external auditory canal by perforating the posterior edge of the thin auditory plate just above where it joins the tympanic plate. This operation opens up immediate communication with the attic and petro-mastoid canal. In a large number of instances the same object is attained by perforating the membrana flaccida as previously recommended. Efforts must not be omitted in these cases to re-establish drainage from the attic down into the atrium, nor should it be forgotten that a communication with the Eustachian tube very frequently remains in these cases.

In the local treatment of chronic cases where sinuses remain, after the removal of polypi or other products, salicylic acid has, in my hands, been attended with the best results, bringing about a dry desquamative condition, which is often the best issue to be hoped for.

ARTICLE XII.

THE PNEUMONIA-COCCUS OF FRIEDLANDER (*Micrococcus Pasteuri*, Sternberg). SECOND PAPER.

By GEORGE M. STERNBERG, M.D., Surgeon U. S. Army.

THE present brief paper becomes necessary, in order to correct an error which occurred with reference to the illustrations of my paper published in the preceding (July) number of this JOURNAL.

Unfortunately the writer was absent in Europe when this paper was published, and failed to receive the proof which was sent to him for correction. This failure has resulted in a grave error through which the amplification of Figs. 1, 2, 3, and 4 is 2500 diameters, while the descriptive text gives it as 1000 diameters. As stated in the last paragraph of the paper, the figures were drawn under the camera lucida with an amplification of 2500 diameters. They were to be reduced by photography to 1000 diameters. *But the reduction was inadvertently not made*, and the comparison of these figures with Fig. 6, in which the amplification is 1000 diameters, shows a very great difference in the dimensions of the oval micrococci from different sources, which might be taken as evidence of a specific difference, instead of specific identity as claimed, if it were not due to a mistake. Moreover, Figs. 5 and 6 are such faulty reproductions that they fail utterly to establish a morphological resemblance to Fig. 7, which is a very good copy of the figure which illustrates the paper of Salvioli. The cuts which have been prepared for the present paper are better, but a comparison of Fig. 5 with the photo-micrograph from which it is copied shows how difficult it is for the wood-engraver to

reproduce faithfully a photograph from nature. Fig. 5 of the illustrations of my first paper is omitted from this one, and the reader is referred to the original work of Prof. Sée in which it is Fig. 2, of Plate I.

In claiming that the pneumonia-coccus of Friedlander is specifically identical with my *Micrococcus Pasteuri*, it must be understood that I use the word *species* in its botanical sense, and that I recognize different varieties—physiological or pathological varieties of more or less permanence—of the same species.

It may be well to recapitulate briefly the principal evidence which has led me to the conclusions stated.

a. My own observations and the figures given by Talamon and Salvioli have convinced me of the morphological identity of the oval micrococcus found in pneumonic exudate and my *M. Pasteuri*, as found in the blood of a rabbit killed by the injection of human saliva. The mode of grouping, in pairs, or in chains of three or four elements, and the occasional appearance of a mucinous envelope (capsule of Friedlander) which is developed by a special method of treatment (staining with iodine solution) complete the evidence of specific identity from a morphological point of view.

b. Injections of pneumonic exudate and of liquid cultures from the same, made by Talamon in France, and by Salvioli in Italy, into the pulmonary tissue of rabbits, have, in a majority of the cases reported, caused the death of the animal, and it is noted that the blood contains the oval micrococcus in abundance, also (by Salvioli) that the spleen is enlarged, and that an infectious disease is induced. The accounts given by both of these authors induce me to believe that this infectious disease induced by injecting pneumonic exudate into the pleural cavity or pulmonary tissue of rabbits is identical with the fatal form of septicæmia in rabbits, previously described by me, which is induced by the subcutaneous injection of human saliva.

c. In my own injections of pneumonic sputum, made subcutaneously, and of exudate scraped from a freshly cut section of a hepatized lung (six hours after death) I have obtained results identical with those obtained by injecting my own saliva into rabbits.[1]

d. Injections of cultures of *M. Pasteuri* into the pleural cavity of rabbits induce a fibrinous pleurisy, as is the case when pneumonic exudate is injected in the same way, and in both cases the blood is quickly invaded by the oval micrococcus and death occurs from septicæmia.

[1] It is not my fault that these experiments have not been more numerous. I have done my best to obtain material in Baltimore, but not being connected with a hospital, and not having a private practice, I have been obliged to rely upon other physicians for assistance in obtaining pneumonic material for experimental purposes, and have been greatly disappointed in not securing a greater number of satisfactory samples during the season when pneumonia was most prevalent in this city.

e. The experiments of Talamon and of Salvioli show that the production of fibrinous pneumonia is not a constant result of injections through the thoracic walls of pneumonic exudate, or of cultures from the same. When it occurs it appears probable that it is due to the fact that the point of the syringe has penetrated the pulmonary tissue, and the injection has

Fig. 1.

Fig. 2.

Fig. 1.—*Micrococcus Pasteuri* from blood of rabbit inoculated subcutaneously with normal human saliva (Dr. S.). Stained by the method recommended by Friedlander. Magnified 1000 diameters.

Fig. 2.—*Micrococcus Pasteuri* from blood of rabbit inoculated subcutaneously with fresh pneumonic sputum from a patient in the seventh day of the disease. Same staining and amplification as Fig. 1.

Fig. 3.

Fig. 4.

Fig. 3.—Surface culture of *M. Pasteuri* showing development of long chains. Same staining and amplification.

Fig. 4.—Surface culture of *M. Pasteuri* from blood of rabbit injected with pneumonic sputum, showing the so-called "capsule" of Friedlander. Same staining and amplification.

Fig. 5.

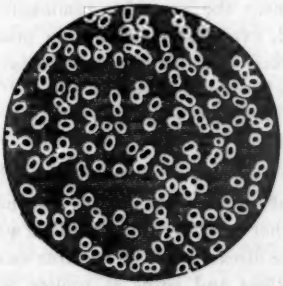


Fig. 6.

Fig. 5.—From a photo-micrograph made by the author of this paper in 1881, and used in April of that year to illustrate a paper on "A fatal form of septicæmia in the rabbit induced by the subcutaneous injection of human saliva." The preparation is from the blood of a rabbit recently dead, and is stained with an aqueous solution of iodine and potassic iodide. Magnified 1000 diameters. Photographed with Zeiss's one-eighteenth inch hom. ol. im. objective.

Fig. 6.—Copied from illustration accompanying the paper of Salvioli in the *Archivio per le Scienze Mediche*, Turin, vol. viii. Tar. viii. Fig. 2 "Cells of the pleuritic exudation containing pneumonia cocci, mounted in Canada balsam." Stained with gentian violet. Amplification not stated (about 1000, G. M. S.).

been deposited in the substance of the lung. This supposition is supported by the writer's experiment in which pneumonia resulted from an injection of a gelatine culture of *M. Pasteuri* directly into the substance of the lung.

The following corrections should be made in my first paper:—

Page 112, 10th line, *for* especially *read* specifically.
" 118, 22d line, *for* Fig. 2 *read* Fig. 1.
" 122, 7th line, *for* same *read* name.
" 123, 8th line, *for* Geiss's *read* Zeiss's.

ARTICLE XIII.

CALCULI REMOVED FROM CYSTS OF THE VULVO-VAGINAL GLANDS. By A. VICTORIA SCOTT, A. M., M.D., of Philadelphia. With Comments by ROBERT P. HARRIS, M.D., of Philadelphia.

THE extreme rarity of this form of calculus gives the case here reported an unusual degree of interest. Two small concretions in so unusual a location might readily escape detection, as these did, on the part of several physicians, and it was only by careful attention to the sensations and directions of the patient that they were at last discovered and removed.

Mrs. A. H., aged 49 years, a mulatto, spare-built, and a cook in a restaurant, has been a widow since the age of 21 years. She commenced to menstruate at the age of 16, and after passing through two periods, was married, giving birth after eighteen months to a daughter, who still survives. Five years after her marriage her husband died, and at the age of 43 she ceased to menstruate. Three months after the menopause she noticed a swelling in the right labium near the posterior commissure of the vulva, which became quite painful, extended up along the postero-lateral side of the vagina, and finally burst into this passage, discharging a quantity of fluid which appeared to be largely composed of blood. This abscess closed, but a stinging sensation continued afterward where it had formed.

In time an attack of the same nature occurred on the opposite side of the vulva, but the right side gave the greater amount of discomfort. After this, one abscess formed after another on either side; medical advice was sought, but the exact character of the disease in all its features was not discovered, it being masked by sensations and pains at remote points which directed attention elsewhere than to the vaginal wall. The woman complained of intense itching and burning in the vulva, pains in the back, groins, and lower part of the abdomen, with at times an irritating leucorrhœal discharge. When active inflammation was in progress, she experienced an acute pain in the cysts, which became severe upon pressure, and even a slight touch excited painful feelings in her back, groin, and on the outside

of the thigh of the corresponding side. These feelings were particularly marked upon the right side, and occasionally prevented the right lateral decubitus. She was also subject to attacks of urticaria, sciatica, and rheumatism. Her sufferings obliged her at frequent intervals to give up work and remain at home, and on one occasion she was disabled for eight months. Seeking relief she consulted a number of physicians, was under care in the clinic of the Woman's Hospital for a short time, and was also an out-patient for six months of the University of Pennsylvania.

Seventeen months ago she came to my office, when a vaginal exploration revealed the presence of two cysts, connected with the vulvo-vaginal glands, with a hard eminence on either side. As she declined the use of the knife at that time, I gave her some simple applications which afforded temporary relief.

In June, 1885, she returned, and expressed a willingness to undergo an operation. The vagina presented postero-laterally, on either side, a hard swelling. These varied, according to the state of the cysts, from the size of a pea to that of a shellbark, depending mainly on the amount of fluid collected, or the degree of inflammation present. The patient was led to find these "hard lumps" with her finger by the sense of pain experienced, and they were seated about two inches within the vagina. I discovered them to be centres of acute sensation, pains being set up under pressure in distant locations.

On July 2d, the woman being placed under the effects of ether by Dr. Caroline Peterson, I operated on her at her own home. With one finger in the rectum and another in the vagina, it was easy to determine that each swelling contained a hard, central, pea-like deposit. An incision brought the knife upon a calcareous body, contained within a capsule, which, being drawn out and opened, gave exit to a calculus of a white color, round and smooth. The right concretion was about $\frac{3}{16}$ of an inch in diameter, and the other $\frac{1}{8}$ of an inch. By drying they have diminished in size, due no doubt to the loss of fluid contained in their animal matter. Under the point of a needle they are hard and gritty, and may readily be scratched into powder. Their removal occasioned the loss of about a tablespoonful of blood. When the bleeding ceased, chromic acid was introduced into the cyst cavities. On the third day after the operation the patient claimed to feel less soreness than at any time in two years, and to be in a better condition than she has been in six. There still remain the two fistulous cyst cavities, which will probably refill and discharge; but the age of the woman should favor a treatment for their obliteration, as the functional activity of the glands must have largely diminished.

Dr. Robert P. Harris was kind enough to examine the patient, and to him I am much indebted for the following remarks and observations in reference to the case and the infrequency of this form of calculus.

The woman above referred to had undoubtedly a succession of attacks of inflammation, due at the commencement to the secretion of the glands of Bartholini having been retained, either by a stenosis of the duct, or partly contained in a cyst from the parenchyma of the gland, having no connection with the natural outlet, and more probably the latter, when we consider the age of the subject and the peculiar direction taken by the cyst-growths in their enlargement; a direction quite unusual in this vulvar disease. On some occasions when the cysts burst the discharge appears to have been simply the yellowish-white secretion natural to these glands; in others the fluid is described as brownish, which we know from other cases is due to an admixture of blood; and then again it was purulent, pus being added to the glairy secretion.

In young women, cystic growths of Bartholini's glands are due in a large proportion of cases to stenosis of the duct. The closure causes the infundibular portion of this conduit to dilate into an oval sac, which in some cases becomes spherical and in others pyriform, as it enlarges, and the size even of a hen's egg may be attained in some extreme cases, interfering very much with locomotion, as the thighs cannot be brought together without producing pain. The direction of enlargement is either along the labium toward the anterior commissure, or outward under the femoro-vulvar sulcus; the cyst may lie under either the labium majus or the nympha. But in the older woman under observation, the swelling, as described to me by her, commenced near the posterior commissure, exactly over the region occupied by the gland-duct of the right side, and extended along the vaginal wall, where it opened spontaneously. When the disease occurred on the opposite side, the extension was in the same direction. This form of extension is mentioned by Schroeder, in vol. x. of Ziemssen's Encyclopædia, in which he says: "The cysts of the glands of Bartholini are the most common of the cysts of the vulva. They may spring either from the excretory duct, or from the gland itself. In the former case they are oblong at first, and become afterward round, while those of the gland itself grow to a large size and exhibit occasionally a lobular form. They are situated in the labium majus, in the region of the gland or of its excretory duct, *though exceptionally*, and, as shown by Hoening, *they may extend up along the side of the vagina* into the true pelvis and even beyond the vaginal cul-de-sac."

Calculi formed in such cysts, from materials held in solution in the gland secretion, are of very great rarity, so much so that I cannot find any mention of such a disease, although I have examined a large number of works upon anatomy, surgery, and the diseases of women.[1] Nor can I find among our leading gynæcologists any one who has had a case or has

[1] M. Boys de Loury (*Revue Médicale*, March, 1841) mentions a form of fibrous cyst, having a thick and solid wall, in which osseous or gypsum-like plates have been found.

heard of one. Thus far, Mr. Lawson Tait is the only one who has removed such a calculus, which he writes me he did some years ago.

Nor in any work giving analyses of the minor concretions of the human body do I find any notice of this one. We find mention of calculi obtained from the salivary ducts, or found in the gland structure; of others located in the tonsil, prostate gland, the mesenteric glands, and even in the pericardium, eyeball, and nose. Huguier, of Paris, wrote the most thorough treatise upon the diseases of the secretory glands of the vulva that has ever appeared in any country, and presented it before the National Academy of Medicine in 1846. In the *Mémoires* of this Society published in 1850, it occupies 325 quarto pages, much the larger portion of which is devoted to the diseases of the vulvo-vaginal glands, and is handsomely illustrated by lithographic plates; but there is no mention made of any concretions. The author of this monograph had abundant opportunities for observation in a city where the morals of young women would appear from his reports to favor the production of disease in the glands of Bartholini; he made dissections of the diseased structures, and reported a large number of clinical cases. His classification of the non-specific diseases of these glands is as follows: 1. Simple hypersecretion; 2. Muco-purulent secretions; 3. Engorgement or chronic inflammation; 4. Induration and fibrous degeneration of the gland; 5. Acute inflammation of the follicular body; 6. Abscess of the parenchyma; and 7. Abscess of the excretory cavity. To these we may add an 8, Atrophy and absorption of the gland tissue. Simple hypersecretion belongs to the active functional period of these glands, which, in the experience of Huguier, is from the age of 18 to 27. He had rarely met with a diseased gland under 17 or above 45; where seen at 50, the affection had long existed.

The vulvo-vaginal glands are almost universally called the glands of Bartholini, after Caspar Bartholinus or Bartholini II. of Copenhagen. They are sometimes given the name of Duverney or of Méry. There were three of the Bartholini family who were all anatomists, and all wrote medical works, but the third was most devoted to anatomical researches. They were Caspar I., Thomas his son, and Caspar II. son of Thomas and grandson of Caspar I. Danes by birth, they were cosmopolites in their residence, studies, and knowledge of languages, being fond of travel, and quite at home in Germany, Italy, and France. Caspar II. was led, by the celebrity of Dr. Joseph Guichard Duverney, 1648–1730, of Paris, to go to that city to complete his medical education, and especially to enjoy the advantages afforded for the study of anatomy under this celebrated teacher, who graduated at Avignon when only 19, and was at the time under 28 years of age. Here he graduated as M.D. in 1678; but, before he obtained his degree, he published at Rome, in 1677, his little book *De Ovariis Mulierum et Generationis Historia*, in which is

the first account of the racemose glands which bear his name. This work was republished in Amsterdam in 1678, in Nuremberg in 1679, and in Lyons in 1696, but is at the present day one of the most rare of the many works of the three Bartholinis. The anatomical plates of Duverney, in which the location of the glands is indicated, were not published until much later. Méry was an enthusiastic student of anatomy, and a cotemporary of both Bartholini and his preceptor (1645–1722), but has no claim to the discovery. Dionis,[1] an associate of Duverney, evidently did not know the source of the secretion furnished by these glands, which he attributed to *lacunæ* near the urethra.

During its period of functional activity, the gland of Bartholini is capable of secreting, notwithstanding its diminutive size, a large quantity of fluid, which has to escape through a duct only of sufficient calibre to admit an eye-probe. Located as it is, and subject to the effect of inflammation originating in neighboring tissues, it is not to be wondered at that the excretory duct is liable to stenosis, resulting in an accumulation of secretion between the gland and the point of closure. Where the canal is still pervious, the patient may relieve the discomfort of tension by emptying the cyst under digital compression; but where entire closure has taken place, the knife alone can give relief, or a spontaneous evacuation will take place by ulcerative action. As these glands are usually unequally developed, it is rare to find both of them affected at the same time. Huguier gives in his plates one example where the stenosis was bilateral. Such a marked case, if occurring centuries ago, one would suppose might have led to the discovery of these long-overlooked glandular bodies.

August 3, 1885. My attention was called to-day to the condition of Mrs. H., whose physician is absent, and who is under the care of another. She was fully relieved for a few days by the removal of the calculi, but now is suffering from the discomfort of the discharging fistulæ which will require special treatment for their obliteration. Excision of the cysts is not to be recommended, as cases have been cured without a resort to the knife, and the vascularity of the parts involved makes it advisable to resort to more simple measures. As tincture of iodine has failed in this case and many other cases, and as a number have now been radically cured by injections of chloride of zinc in strong solution after failure with the iodine, this plan of Lizé,[2] Duvernoy,[3] and others will be given a trial. Lizé's injection consists of 50 centigrammes (7¾ grs.) of chloride of zinc, and 5 grammes of distilled water, or 1 part to 10. Of this solution Duvernoy used but six drops, by hypodermic syringe, and a cure was effected. The *tube à drainage* of Chassaignac has also been successfully

[1] Treatise on Midwifery, English Translation, pp. 42 and 105, 1719.
[2] Bulletin et Mém. Soc. de Chirurg. de Paris, 1876, N. S. ii. p. 129.
[3] Annales de Gynécol., 1880, xiii. pp. 251–254.

employed, as has the elastic ligature. The locality of the fistulæ in the present case may make it one of unusual difficulty to treat successfully.

As quite a number of physicians had failed to detect the calculi in this woman, whose own sensations finally led to the form of examination which discovered them, I asked her why it happened; and she replied that they interrupted her before she had fully explained to them her case as indicated through her feelings, when certain sensitive points were touched, those chiefly noticed being the points of hardness already referred to.

ARTICLE XIV.

OBSERVATIONS ON THE OLEATES.[1]

By HENRY W. STELWAGON, M.D., Physician to the Philadelphia Dispensary for Skin Diseases, Chief of the Skin Dispensary of the Hospital of the University of Pennsylvania, etc.

IT is to be regretted that the therapeutical uses of the oleates have not been passed upon by a greater number of observers. The claims regarding their therapeutical importance in dermatology have been so extravagant, that in view of my own observations I am at a loss to explain the wide discrepancy. In regard to the chemistry and preparation of the various oleates, both as to their manufacture by the direct combination of the acid with the base and by double decomposition, almost, if not entirely, as much can be found in the English translation of Gmelin's Handbook of Chemistry, published in 1866, as in the writings of the past several years. Willing to grasp anything new that promised an advance in cutaneous medicine, I have experimented somewhat largely with the different oleates, and in a paper published in the *Medical and Surgical Reporter* of March 15, 1884, expressed the following opinion: "In conclusion, it may be said, that the oleates are to be considered merely as additional means of treating diseases of the skin, and are in no sense to be looked upon as specifics, for often enough they must be discarded to give place to the older and more tried methods of dermic therapeutics." After a still further investigation of the subject, I am convinced that the judgment then pronounced was too favorable. In the paper referred to the conclusion was also reached that of all the oleates those of mercury, zinc, lead, and bismuth deserved confidence.

The most important of these several preparations is the mercurial oleate. The physical properties of this salt are too well known to call for description. As sold in the shops, however, it is in the form of a ten or

[1] Read at the Ninth Annual Meeting of the American Dermatological Association, held at the Indian Harbor Hotel, Greenwich, Conn., August 26, 27, and 28, 1885.

twenty per cent. oleate, which means a certain amount of the oleate with free oleic acid. The chief use made of this oleate has been for the purpose of impressing the system by means of inunctions in the treatment of syphilis. Clinical observation has convinced me, however, that for this purpose it is not comparable to the old blue ointment. In fact, after a somewhat extended use of this oleate, probably limited compared with that of others, I cannot recall a case in which symptoms of salivation were observed. In regard to the ready absorbability of the oleate thus brought in question, my observations clinically made are in accord with the experiments made by Dr. Brubaker, of Philadelphia. In a series of personal inunctions, also, experimentally practised, the oleate failed to produce any constitutional effect, while with the blue ointment symptoms of the physiological action of mercury were rapidly experienced. I refer of course to the pure oleate. An impure or partly decomposed oleate, as is usually sold, contains free mercury, and if such a preparation is mixed with a fatty base, inunctions may in susceptible individuals have a systemic effect, as it is then somewhat similar to blue ointment, although only fractionally as strong.

The mercurous oleate, mixed with lard, is for the purpose of inunction considered superior to the mercuric oleate, and no doubt is, for the reason probably that it is an unstable salt, quickly decomposes, and hence, as usually found, contains a greater quantity of free mercury.

While my observations lead me to infer that the pure oleate of mercury compared to the blue ointment is practically inert for use in the inunction treatment of syphilis, they are far too limited and too antagonistic to the general belief and practice to warrant a positive assertion without confirmatory evidence. The local irritating effects of the oleate in inunction are by no means trifling, and occasionally prove an obstacle to its employment.

It is especially in the treatment of ringworm of the scalp that this oleate is found of greatest value. In my experience it is for this disease one of the most reliable remedies, but, like all other remedies for this affection, it sometimes fails, although less frequently. Its use should be continued for weeks, and more frequently for months. An ointment of one part of the oleate in four or five of melted lard is a good formula, and is superior to a solution of the oleate in oleic acid, as the latter is more apt to produce crusting. The spots or entire scalp, as the case may be, is to be rubbed thoroughly once or twice daily with the ointment, and the excess wiped off with a linen rag. The parts are to go unwashed for a week or more, so that the oleate ointment may soak into the follicles. Epilation is to be practised as an essential part of the treatment. The ointment of the strength suggested above rarely, if ever, proves irritating to the scalp, but it may, if it is carelessly allowed to run over on the forehead or neck, give rise to varying degrees of irritation; even on these parts, however, the

irritation is rarely marked. Some cases respond rapidly to this plan of treatment, while others yield more slowly. In addition to the efficacy of this ointment in chronic ringworm of the scalp, in that other form of the affection, tinea sycosis, it will occasionally act as a specific. For lack of opportunity I have not used the oleate in favus, but it will probably be found equally efficacious in this disease.

Another use of this oleate is as a substitute in ointments for the other mercurials, calomel, ammoniated mercury, and the nitrate of mercury. For local stimulation in the cutaneous lesions of syphilis a ten or twenty per cent. ointment makes one of the most efficient applications.

The oleate of zinc is another oleate of some value. It possesses astringent and stimulating properties. Melted with three or four parts of lard or vaseline it forms a good ointment, and is frequently of service in eczema and similar inflammations. As a dusting powder its value has been overestimated. In my former paper I was inclined to consider it an addition to this class of remedies, but greater experience has taught me that for this use it is, as a rule, impracticable, as in the presence of heat or moisture (the heat and moisture of the body are sufficient), it becomes sticky and the particles become aggregated; moreover, it has very little, if any, absorbent power. In some instances its use as a powder was followed by marked irritation, nor could this effect be attributed to the quality of the powder used. The oleate of zinc in ointment compared to the oxide of zinc is more astringent and stimulating, but much more likely to disagree.

The oleate of bismuth either alone or in combination with lard or a similar base forms, if properly made, a mild soothing ointment which may be advised in all cutaneous inflammations.

The oleate of lead melted with an equal part of vaseline forms an astringent, soothing ointment, an excellent substitute for diachylon ointment, and will keep indefinitely. In winter temperatures the proportion of vaseline should be increased. It is scarcely necessary to enumerate the diseases in which it may be advantageously used, as its astringent and soothing properties are sufficiently indicative.

The oleate of copper is another oleate about which much has been written, especially as to its value in ringworm of the scalp, but it has failed in my hands to deserve the claims made for it. As with all parasiticides it will cure simple cases, but for the chronic, stubborn cases frequently met with, it is not comparable to the oleate of mercury or to tar and sulphur preparations. In regard to the other oleates, such as nickel, aluminium, tin, cadmium, arsenic, etc., which have also been used in the treatment of diseases of the skin, they possess, as far as experience goes, no claims to special therapeutic power.

While the oleates of mercury, bismuth, lead, and zinc have certain advantages, which have been pointed out, there are several difficulties in

the way of their gaining permanent popularity. The oleic acid odor which characterizes all the oleates is a decided disadvantage; it is peculiar, disagreeable, and cannot be covered up. Although apparently simple and easy of manufacture, yet a good preparation is not generally procurable, is in fact exceptionable. They are expensive and therefore unsuitable for dispensary and general use, as just as much in quantity, of the oleates or their ointments, is required, if properly used, as in the employment of other ointments. Further, while the most of the oleates, if rightly prepared, show very little tendency to decompose or to become rancid, this cannot be said of the commercial preparations usually met with. Lastly, the oleates, even when good preparations, will frequently prove irritating, and thus give rise to uncertainty as to effect. It is true the same may be said of simple lard or vaseline, but this occurs so rarely with these latter as to be exceptional; not so with the oleates.

In conclusion, it is difficult to place the status, present and future, of the oleates in cutaneous therapeutics, but from the observations of competent authorities in the past year or more, taken with the results of my own experience, and in view of their disadvantages as mentioned above, my conviction, provisionally stated, is that of all the oleates (those employed in diseases of the skin referred to) the oleate of mercury, the oleate that has been longest in use, is the only preparation that promises to hold a permanent place, and even that is likely to recede considerably from the prominence it held a few years ago.

ARTICLE XV.

THE CURE OF EXTRA-UTERINE FŒTATION BY ELECTRICITY.

By HENRY G. LANDIS, A.M., M.D., Professor of Obstetrics and Diseases of Women in Starling Medical College.

IT may be regarded as an accomplished and proven fact that electricity in some form is a specific cure for extra-uterine pregnancy. It arrests the growth and destroys the vitality of the embryo and cyst, and its use is followed by a truly remarkable disappearance of all or the greater part of the growth in a short time. This at least is true when the electricity is used during the first half of the pregnancy. As we approach the period of viability in the child the risk of rupture of the cyst diminishes, and the propriety of surgical interference at or near term becomes greater.

Experience is lacking as to the comparative effect of laparotomy as contrasted with the retention of an electrically destroyed fœtus of large size. Nor are we likely to acquire such experience, for the child at or

near term has acquired rights of existence which it did not have at an earlier period. The life of an extra-uterine fœtus at three months is worth next to nothing, because of the tremendous risks to which it as well as the mother is subject. At term the risks have mainly been passed, except such as are conquerable by abdominal surgery. For the present, then, we may limit the beneficent effects of electricity to the first half, or thereabouts, of the pregnancy.

The great advantages of the faradic current over all other forms of electricity have been hitherto pointed out. Its convenience and portability will continue to recommend it to the general practitioner as long as the present state of information in matters electrical obtains. One practical point in its use remains to be elucidated, and hitherto those who have had to use the battery have had to grope in the dark.

Shall we use a weak current for a long time, or a strong current briefly, and how many repetitions of the application are necessary? The published reports of cases, my own included, will show that on this point uncertainty has prevailed. To clear it up, if possible, I have conducted the following series of experiments. They are based upon the supposition that success is achieved by the death of the embryo; the *specific* value of the method being that the fœtus will surely be killed if it gets a large enough dose of the current. If a man is struck by lightning, he is certainly killed if the current is strong enough, otherwise he may recover, perhaps without injury. In operating upon an extra-uterine cyst, we remember that we have also a woman to deal with, and we must not kill two birds with one stone. Therefore, *a priori*, we would prefer to destroy the fœtus with mild currents, repeated as long and as often as necessary, if it can be done, rather than to endanger the mother by sharper shocks. There is also in the latter method a theoretical danger of causing rupture of the cyst, on account of the sudden spasm which a strong current may induce in its contractile envelope. Also the discomfort is very great when strong currents are used.

The experiments are also based upon the supposition that the fœtus is in the matter of vitality to be compared with some of the lower forms of life.

Insects were therefore first chosen. After a few unsatisfactory attempts upon flies, the following was conducted:—

Experiment I.—A large beetle (*Lucanus dama*), two inches long, was connected with the poles of a Fleming faradic battery. This battery was used in all the experiments, the poles (unless otherwise stated) being placed in one and four. The chitinous envelope of insects is a complete insulating material. The poles were therefore provided with large needles, and one needle being pushed into the beetle's mouth and œsophagus, the other was introduced into its anus and pushed into the abdominal cavity. The full strength of the battery was then turned on, the coil being completely uncovered. Such a current would be unendurable by a human being for more than a few seconds. The beetle at once presented the appearance of death (which it is not accustomed to feign), becom-

ing motionless. The current was continued for *one hour*. It was then stopped, and the apparently dead beetle was placed on a table. On re-entering the room two hours later the beetle was found on the floor, running towards me in a lively manner, as if to ask for more.

This experiment was repeated and varied, but the upshot of them all was that the faradic current will not kill insects with any certainty.

The next series was performed upon fish, there being many points of resemblance and analogy between a young human fœtus and a fish. The species selected, *ex necessitate rei*, were minnows, probably of the genus *Hudsonius*. All American minnows, according to Jordan, are of feeble organization, and ought therefore to succumb readily to electricity. In conducting the experiments a minnow was placed in a china basin of water. The electrodes were then introduced into the water at some distance from the fish, one on each side. This was thought to be an essential feature in any course of experiments, since the fœtus also exists in a liquid, although its placental connection allows of some direct transmission of the current. It was soon found that the electrodes, or one of them, had to be brought quite near to the fish in order to overcome the resistance of the water unless a very powerful current was used.

Experiment II.—One minnow. Current 1-4 for ten seconds. The minnow turned over as if dead, but recovered slowly; in twenty minutes completely.

Experiment III.—Same minnow and another. Current for seventy seconds. Prompt suspension of animation, but both began breathing in one minute; in a half hour, irritation provoked voluntary movements, and they then swam about unconcerned.

Experiment IV.—Same minnows as in III. Current for three minutes. Minnow No. 1 dead. Minnow No. 2, gills moved feebly within one minute after the suspension of the current, and continued for ten minutes longer, after which death occurred.

These experiments were made with a very weak secondary current, and with the coil entirely covered. As far as they go they show that such a current has the power to tire out the animal if repeated sufficiently.

Experiment V.—Fresh minnow. Current 1-4, but with the coil uncovered, the most powerful attainable with this battery. Current for five seconds. Immediate arrest of respiration and apparent death, succeeded, after the removal of the current, by active but uncoordinated movements. Entirely restored in five minutes.

Experiment VI.—Same minnow; same current for one minute. Apparently instant death. Almost immediately after cessation of current the same movements as in IV. In five minutes completely restored.

Experiment VII.—Same minnow; same current for two minutes. Instant and permanent (!) death.

Experiment VIII.—Fresh minnow. Same current for two minutes. Instant cessation of respiration and death without recovery.

Experiments V. VI. VII. tend to show that even a powerful current needs to be repeated, or, judging from VIII., to be continued for a long time.

Experiment IX.—Fresh minnow; current 1-4, but with coil covered, for two minutes. Respiration did not cease entirely for one and three-quarter minutes,

and in twenty-five seconds after cessation had recommenced. In one minute, more complete recovery

Experiment X.—Same minnow; four minutes later reapplied the same current for three minutes. Gills moving feebly during the entire application, and restoration complete in fifteen minutes.

Experiment XI.—Same minnow; sixteen hours later. Very active. Applied same current as in IX. and X. for four minutes. Death prompt and complete.

Although the current 1–4 with coil covered is a very moderate one, the battery will give still feebler ones. A single experiment is sufficient to demonstrate their inutility.

Experiment XII.—Fresh minnow; current 1–6 for ten minutes; without apparent effect of any kind. Current suddenly changed to 1–4 and continued for one minute. Apparent death almost at once. Respirations began almost immediately after the removal of the current. Full recovery in a few minutes.

Experiment XIII.—Same minnow; current 1–4, three minutes. Death.

Experiment XIV.—Fresh minnow; current 1–4, for ten minutes. Perhaps from superior strength it was not much affected for two minutes and forty-five seconds. It then turned over, and the gills moved feebly during the rest of the application. As soon as the current was removed, it righted at once, but continued feeble and sluggish for seven minutes, then recovering completely.

Experiment XV.—Same minnow; fifteen minutes later; quite brisk. Same current for one minute. Profound quiet for the first three-quarters of the minute, respiration beginning feebly at that time. Completely restored in five minutes.

Experiment XVI.—Same minnow; shortly after recovery. Same current for three minutes. Very little affected.

Experiment XVII.—Same minnow; five minutes later. Full current, coil uncovered, for three minutes. Respiration continuous throughout the application, though feeble, and the minnow turned over at once. In thirty minutes was swimming about, but an occasional lurch betrayed weakness. Was placed in the aquarium with untouched minnows, but died during the night.

The general harmony of these observations with clinical experience is remarkable. Life (at this level) may apparently be destroyed at once, but in reality is only suspended, and repeated shocks are necessary. It reminds one of the nine lives of a cat.

I made no experiments upon pregnant mammals, because the presence of the uterus necessarily vitiates the result. The current induces uterine contraction; this causes compression of the placental circulation at least, and expulsion from the uterus if continued. Instead of this, new-born rabbits were selected as being very tender creatures, and likely to be easily influenced by the current.

Experiment XVIII.—Rabbit, a few hours after birth. Mild current for one minute, with little evidence of any inconvenience.

Experiment XIX.—Same rabbit; one inch of coil uncovered for thirty seconds, when the full force of the battery was turned on for thirty seconds. No apparent effect upon the animal, except in struggling to get away at the first. He was replaced in the pen and lived to grow up.

Experiment XX.—Rabbit from another litter. A few hours old. Its parent (or a rat) had removed one ear and the toes from the hind leg on opposite side. Full current for one minute. The animal seemed feeble afterwards.

Experiment XXI.—Same rabbit three minutes later. Full current for one and a half minutes; waited then for two minutes and reapplied current for three minutes. At the close it lay quiet, scarcely breathing, but reflexes were easily excited. It seemed cold, in part from the wetting with the sponge electrodes, though

the day was hot. After warming it apparently recovered entirely in about ten minutes.

Experiment XXII.—Same rabbit thirteen minutes later; full current for five minutes. A few feeble respirations afterwards, but within five minutes was dead.

Experiment XXIII.—Another rabbit, also marked by loss of one ear. Full current for five minutes. Soon regained its former appearance and recovered.

In these experiments the electrodes were placed upon a shoulder and the opposite rump. In the second rabbit the current was in one application given through the wounded surfaces, but without special difference. The results were certainly unanticipated, and constitute further proof of the comparative immunity from electrical influence of the lower animals.

Conclusions.—I think we are warranted in drawing these conclusions from the facts observed:—

1. In using the faradic current in extra-uterine pregnancy, the applications should be protracted for an hour, if the patient can bear it.

2. The current should be repeatedly applied, in order that the vitality of the fœtus may be finally exhausted.

3. The current should for at least one sitting be used in great strength.

4. The current probably acts, not only by destroying the fœtus, but by its action upon the placental circulation; an additional reason for a long application.

ARTICLE XVI.

A NEW DISCISSION INSTRUMENT. By ALBERT G. HEYL, M.D., Ophthalmic Surgeon to the Episcopal Hospital, Philadelphia.

A COMPARATIVELY large number of operations have been devised for making an opening in the capsular or capsulo-lenticular structures so often found after cataract extractions. They may be classified as follows: 1. Those in which an opening is made in the cornea large enough to admit of the direct manipulation of the membrane; *e. g.*, the Wecker operation, with *pince-ciseaux*, the similar one of A. Weber, the Noyes operation with Graefe knife and blunt hook. 2. Those in which the capsule is acted on through the medium of the cornea. Such are the various needle operations. This method of operating is much less rough than the former, and therefore much to be preferred if it can be made effective.

To accomplish this result it is necessary to bear in mind the conditions under which the operation is made. The object is to make a hole of sufficient size for useful vision in a membrane of varying density and more or less yielding; this is to be accomplished by an instrument which must

pass through the cornea. If needles are used, as I shall suppose, the action will be largely that of a lever of the first class. The fulcrum will lie in the cornea, the capsule will be the weight lifted, and the force will be applied to the handle of the instrument. If the edge of the needle be sufficiently sharp, and the capsules not too tough, and sufficient tension be made, an opening in the capsule will result, from cleavage of the tissues, when the needle is rotated. It will at once be seen that the keener the edge presented to the membrane the better. The ordinary cataract-needle is a very poor instrument for such a purpose, and indeed for operating on a soft cataract. It is an instrument constructed for piercing rather than cleaving in a direction at right angles to its axis. A much better instrument is the knife-needle of Dr. Hays, described in 1855.[1] In this a knife edge is ground on the needle which can be keenly sharpened while the back is bevelled to a point, so that there is the combination of cutting and piercing qualities. This invention of the Hays needle was a great improvement; it was originally intended for operating in lenticular cataract, and as such answered an excellent purpose. It is, however, not so well adapted for the division of secondary cataracts; the membrane offers too little resistance; it will be lifted, but not divided. What is needed is a slight cutting motion in addition to the lever action; this would prevent also a good deal of dragging on the membrane—a very desirable thing.

The discission of a capsule is not always the simple thing that it is sometimes thought to be. Eyes, which to all outward appearances were perfectly free from irritation, have been lost by it; no doubt in some of these cases there was insidious intraocular trouble, but it was the irritation of this little operation which brought the thing to a focus. I have endeavored, with the instrument which I am about to describe, to make the same motion which rotates the needle communicate a cutting motion to it. This is accomplished by making the needle angular instead of straight. The effect of this is that when the handle is rotated the back of the needle rests on the corneal tissue, and the blade of the needle glides forward with a cutting motion. The principle of this is the same as is exhibited in the action of the angular lance-shaped iridectomy knife. In this instrument, as is well recognized, the forward motion to the point in the anterior chamber is given, not by endeavoring to press it directly forward, but by pressing in the direction of the shaft; the construction of the instrument being such that the *resultant* of the forces will lie in the plane of the blade and the point will move forward. It is not to be supposed from this that in using my needle the cornea is pressed upon in a marked degree; the amount of movement is so slight and so delicate that the sensation of pressure is hardly if at all perceptible.

The instrument, as accurately made for me by Mr. Gemrig, is repre-

[1] AMERICAN JOURNAL OF THE MEDICAL SCIENCES, July, 1855.

sented in the drawing. The blade is essentially that of the Hays needle, but the cutting edge is only half as long. The cutting edge is 5 mm.; in length 11 mm., from the point the shaft of the needle is bent at an angle of about 15°, and from this point on to the handle is of increased diameter after the manner of the stop needle of Bowman; this gives increased strength to the instrument, and at the same time prevents the needle from penetrating too far. The cutting part of the instrument may be described as being made by taking a metal bar of the dimensions of the ordinary cataract needle, and forming one end into a triangular pyramid; the altitude of the pyramid being about 5 mm. The vertex of the pyramid will be the point, and one of the edges the cutting edge of the instrument.

Experience has shown that the following is the best way of using this needle: The needle is entered into the cornea and then into the capsule with the hand semi-supinated. The hand is then semi-pronated; the wrist turns and with it the hand; the handle of the instrument moving with the hand describes an arc of about 90°. The instrument may then be withdrawn, and a clean cut of three to four mm. will be found in the capsule. What has taken place is this: In the first place there is the lever motion; were this all, however, in many cases, as experience has convinced me, the capsule would simply move with the needle and not be cut at all; in addition the needle moves forward with a cutting motion, and separates the tissue. The manœuvre may be studied by bending a pin at the same angle as the instrument blade and inserting it into a handle; if a card be notched and the pin be placed in the notch, the hand holding the handle in the position of semi-supination, the point of the operation will be represented at which the needle is engaged in the capsule. If now the hand be thrown into semi-pronation while the pin is pressed a little against the card, the instrument will be felt to slide forward. In this experiment it is necessary in the first position to press the pin against the card a little, otherwise there will be simply a lever motion; but in operating on the eye no effort at pressure is necessary, the wrist movement only being required; the cutting motion will take care of itself.

This instrument has given me great satisfaction. Possibly it may find more extended use than that indicated above. I have used it in the needle operation upon lenticular cataracts; the only thing noticeable was the ease with which the instrument passed through the lens. I have also used it in a case of cataract extraction where one corner of the iris had healed in the wound; the instrument was passed into the iris close to the coloboma, and the endeavor made to cut through the engaged portion so as to free it; no bad result followed from it, but I am uncertain as to whether I fully accomplished my purpose. Perhaps a little difference in the point of entrance of the needle would have produced a more evident result.

1535 PINE STREET.

ARTICLE XVII.

ANEURISM OF AN ARTERIA INTERLOBULARIS RENALIS.

By S. T. ARMSTRONG, Ph.D., M.D., Passed Assistant Surgeon U. S. Marine-Hospital Service.

As far as can be ascertained the following case is unique in medical literature, Surgeon J. S. Billings informing me that there was no report of such a lesion in the Library of the Surgeon-General's Office, U. S. A.; and, aside from its pathological features, it is of interest as a factor for consideration in the diagnosis of, and operative treatment for, abdominal tumors.

A. H. P., male, aged 50, native of New York, occupation barkeeper, was admitted to the St. Louis City Hospital on the evening of May 20, 1879. He was a man of large and fleshy frame; was comatose; skin very pale; Dr. W. H. Hunicke, who made the physical examination, diagnosed pleurisy, enlarged liver, and tumor of the right kidney. No record of illness was obtainable; the patient sank gradually, dying some hours after admission.

I made the autopsy eight hours after death. No external lesion of skin.

On opening the thoracic cavity, the right lung was found adherent to its pleura by numerous recent fibrinous adhesions; the right cavity contained almost 250 c.c. of serous effusion. There were a few pleuritic adhesions of left lung and a small quantity of fluid in its cavity. The heart was firmly contracted, the valves normal.

The abdominal incision allowed a quantity of bloody fluid to escape at the pubic termination. Lifting the omentum, which contained much fat, several blood-clots were exposed between the intestines. These latter were normal. The stomach was congested internally. Removing the stomach and intestines, some 300 c.c. (10 ounces) of free blood were found in the abdominal cavity, and a large clot extended upward under the liver. The right kidney was apparently greatly enlarged, its capsule adhering to the peritoneum and intestines, with other evidences of a circumscribed peritonitis. The capsule was ruptured posteriorly, and from this opening the hemorrhage into the abdominal cavity occurred. Incising the capsule, its enlargement was found to be the consequence of a black, easily disintegrated, hemorrhagic clot, within which was the kidney. The clot was equivalent to 900 c.c. (30 ounces). The kidney was slightly eroded on its surface, and in the external border was a small spherical cavity, about 1 mm. (one twenty-fifth of an inch) in diameter. The tubuli were pressed away, not destroyed, and there was a well-organized fibrinous clot. This was the *fons et origo* of the hemorrhage; and as it contained the only well-formed fibrin that existed in the exudate, and from its shape,

I considered it an aneurism of an interlobular artery. The left kidney was imbedded in a mass of fat; it was slightly enlarged, of pale color, and was evidently the seat of a chronic nephritis. The liver was enlarged, of a light brown color, covered with small nodulations, cirrhosed. The spleen and pancreas were normal.

The deposit of subcutaneous fat, the congestion of the stomach, cirrhosis of the liver, nephritis, and occupation of the patient, point to alcohol as the predisposing cause of disease.

Associated with the first pathological lesions in this kidney, due to the abuse of alcohol, was, probably, a dilatation of this interlobular artery. Had this ruptured, either the blood would have been absorbed by the tubuli, or a small localized hemorrhagic infarct would have resulted, which would have been partially absorbed, partially degenerated, resulting in one of those small yellow spots occasionally found in a kidney. Instead, the increased arterial pressure concomitant with the disease, plus the additional pressure in this special artery at its point of localized dilatation, resulted in an aneurismal condition. Having involved the cortex of the kidney, it ruptured, with the capsule as part of its wall. A dissecting aneurism now commenced slowly filling the capsule, separating it from the kidney, exciting the localized adhesions, and eventuating in rupture and death.

Although from the beginning the cause of the trouble would have been obscure, still, had an operation been performed early enough for renal tumor, the death of the patient from hemorrhage would have been prevented.

The only case resembling this is one reported by Dr. W. H. Dickinson,[1] of congestive nephritis resulting from exposure, in which, at the autopsy, each kidney was found "imbedded in a mass of coagulated blood which lay *outside their capsules* in the surrounding cellular tissue. This hemorrhage was caused by a *rupture* of the capsule from congestive swelling of each kidney." [Italics mine.] The rupture in each gland was at the inferior portion.

Surgical interference in such a case would have been unavailing. The indications in my case would have been the gradual but constant increase in size in the tumor, with the symptoms of internal hemorrhage.

[1] Treatise on Albuminuria, Wm. Wood & Co., 1883, p. 59 *et seq.*

ARTICLE XVIII.

ACUTE PERITONITIS, RESULTING IN SUPPURATION, TERMINATING IN RECOVERY.

By FREDERICK LLOYD, M.D., formerly Surgeon U. S. Vols., late Acting Assistant Surgeon U. S. Army, Iowa City, Iowa.

THE following briefly described case occurring in my practice, for which neither my experience nor research affords a parallel, I consider worthy a place in the records of medicine, as being unique, or at least of exceedingly rare occurrence.

E. H., a girl nine years old, of previous good health, February 26, 1885, was laboring under unmistakable symptoms of acute peritonitis, following persistent constipation. To relieve the latter, castor oil in repeated doses had been empirically and ineffectually administered on the two previous days. A simple enema now given was followed by a solid evacuation. The usual treatment, including opium, was at once instituted, resulting in amelioration of the condition of the patient by the next day.

From this date (the 27th) the frequency of the pulse was gradually reduced from 140 to 100, the respirations from 40 to 26 per minute, and the temperature from 104° to 99°; the abdominal pain and tenderness diminished, the tympanites subsided, the kidneys were active, the skin moist, the bowels easily freed by injections, repose was secured, thirst allayed, and the appetite returned. From day to day improvement went on in all particulars, except that the abdomen remained tumid, and in a few days, instead of diminishing in size, began to enlarge, and to exchange the tympanitic sound on percussion for one of dulness, a change which was accompanied by a diminution of the urinary secretion. It was evident that the enlargement of the abdomen was due to liquid effusion, and it was believed that the case was now converted into one of ascites. The diuretics administered were without effect. Constantly from day to day the abdomen, maintaining its symmetrical proportions, continued to enlarge, while improvement in almost every other particular progressed.

On the 23d March, twenty-seven days from the first seizure, the integument of the pouting umbilicus, which had been tender for a few days, was noticed to be inflamed and soft, and presented the appearance of containing pus, which, however, was supposed to be superficial. This little tumor a few hours later broke, giving exit to a stream of pus the size of a quill, with such force as to discharge the matter for some time clear of the body, reclining in the dorsal posture. In six hours about one gallon of pus, of a slightly alvine odor, of the color and consistence of cream, had been discharged, the quantity having been at first measured, and afterwards estimated.

The discharge, slowly diminishing in quantity, continued for forty hours, when (on the 25th) the orifice at the umbilicus became sealed.

On the 26th the discharge recurred, continuing till the 31st, when it ceased as before to be resumed again the next day. In this way the discharge alternately ceased and recurred, the intervals of cessation having been each succeeding time generally prolonged, and the periods of activity shortened, till in the second week in June it finally ceased altogether, the abdomen having resumed its normal size and form, and the patient having regained her usual health and strength.

Effusion of pus into the cavity of the peritoneum is one of the constant *post-mortem* evidences of the recent existence of acute inflammation of this membrane, but (not pretending to extensive research on the subject) I know of no recorded case going to prove this condition as existing in patients making recovery. In an article on Peritonitis by Dr. Alonzo Clark in Pepper's *System of Medicine*, volume ii. page 1136, reference is made to abscesses of the peritoneum, some of them pointing at the umbilicus as a consequence of acute peritonitis, but the cases alluded to seem to have all terminated fatally.

The case that I cite may go to show that acute suppurative peritonitis may result in recovery, without our knowledge of the existence of the suppuration, the effusion in such instances being small in amount, and therefore capable of being absorbed and eliminated.

REVIEWS.

ART. XIX.—*Transactions of the American Gynæcological Society.* Vol. IX. For the year 1884. 8vo. pp. 408. New York: D. Appleton & Co., 1885.

THIS society now numbers 53 active and 17 honorary Fellows, and the volume under review records the proceedings of the meeting held in Chicago, September 30, and October 1 and 2, 1884. Papers, including the presidential address, were contributed by 14 Fellows; and 12 others entered into the discussions, some of their remarks being given at considerable length. Thus, above one-half of the society were actively engaged in making up the volume, an evidence of the care which has been exercised in selecting the membership, and of the fact that character is of more value than numbers in a scientific body. As the number of Fellows is limited to one hundred, it is not likely in the future to fail in activity by being overburdened with drones.

The address of the President, Dr. ALBERT H. SMITH, is in the form of a monograph, entitled *The Present Aspect of the Puerperal Diseases*, the main point of which is the malady or family of maladies known as puerperal fever or fevers. He defines this "as a febrile condition occurring in a woman from two to four days after the termination of pregnancy, either at full term, or prematurely, characterized by typhous symptoms, high temperature, and frequent pulse, the rapid formation of local centres of inflammation, suppuration, and gangrene, metastatic abscesses, emboli, a violently phlogogenous condition of the blood, and, unless arrested, running on rapidly to disorganization and death."

Labor and the normal processes of recovery therefrom are generally admitted to be physiological, and not claimed to be pathological, although some modern extremists incline very forciby toward the latter view, and act accordingly in their practice.

The author discusses at length the various theories which are held by writers of experience as to the character of the puerperal poison, whether autogenetic or heterogenetic; whether one or multiple in character; whether due to a specific *sepsis*, a diplococcus, a microbe, or some unknown morbific agent, and is not prepared as yet to accept as well established the theories of Koch, Pasteur, or Doléris. After summing up all the evidence *pro* and *con*, Dr. Smith writes:—

"What shall we do then? Hold on to the good old way until we have something more palpably proved to shake us, and keep all our antiseptic precautions, before labor and after. If we have hospital patients, let them be in the hospital as short a time before labor as possible; but let the hospital be kept pure and disinfected; let cleanliness enter into everything; keep away all infection, erythematous, erysipelatous, everything that can taint an atmosphere. Turn the patient out of doors as much as possible. Use disinfectant baths, washes, injections, till labor comes on. Do not knowingly let any one touch the genitalia

without the most rigid purification, nail-brush, soap, and cloth applied to the arms up to the elbow, then soaking in disinfectants of a real virtue. I keep the vulva bathed constantly during the labor with a solution either of Labarraque, 1 part to 6 or 8 of water (good, fresh Labarraque), or bichloride of mercury, 1 to 1000. Unless there be something specially requiring the bichloride, I prefer the Labarraque, because I think the former hardens the tissues more and renders them liable to tear. I do not at all approve of the spray upon the genitalia; it wets the bed and clothing of the patient, requires her to lie in a constrained position, and if the obstetrician is going through any manipulation it wets him; and if carbolic acid is used, it paralyzes his skin so that he is almost helpless. The touch should be made with conscientious care; the hand never introduced without disinfecting thoroughly, and quite as thoroughly when withdrawn. I believe many a woman in long labor is poisoned, especially by the return to her vaginal cavity of a hand soiled half an hour before with her own healthy discharges, which had begun to decompose in the atmosphere of a warm room, upon the warm hand. If the hand is always cleaned as soon as removed there can be no danger of this. I think for cleansing the hand there can be nothing better than bichloride, 1 to 1000, and if I am a little doubtful about my hand I use it often, 1 to 250. It smarts a little, but that is much easier to bear than the loss of a human life. A towel, already soiled from previous use, if used again, may act in the same way."

"When the child is born and the placenta expelled, and especially if any intra-uterine manipulation has been used, my rule is to wash out the vaginal cavity certainly, and the uterine cavity if any evidence of clots in the uterus is present, or any decided patulousness of the os uteri. I do this with hot water at 115° Fahr., with bichloride, 1 to 1000. I have no fear of intra-uterine injections; if they are properly administered they can do no harm." . . . "The injection should be given with a tube with a return current, and then there can be no possible danger. The only portions of the coagula in the sinuses which could be disturbed would be those extending into the uterine cavity, and they had better be washed off at any rate. By using the proper tube, or making sure that the os uteri is patulous, no fluid can pass through the oviducts; but if it did, better that now than pus later; and the whole amount would not equal that entering the abdominal cavity from the sponge used in an abdominal section. As to the entrance of air into the veins, that is not at all a question with any careful operator; there should be no air in the syringe to pass into the veins." . . . "As to the chill that follows, it is a very rare thing comparatively, certainly not occurring in one case in one hundred altogether." . . . "I have never seen it at all attend the intra-uterine injection immediately after labor."

Dr. Smith has been in the habit of washing out the uterus a second time for the removal of coagula and the cure of persistent after-pains kept up by their presence. He has also done the same to rid the organ of decomposing and fetid matter, the presence of which is indicated by a rise of temperature, an accelerated pulse, with slight tenderness over the uterus, and with or without a secondary chill; using the bichloride of mercury solution at 100°. He also writes—

"If in any case the constitutional symptoms or the great fetidness of the lochia should continue, I repeat the washing out once or twice daily until they cease."

Dr. Smith also in ordinary cases directs the nurse to give vaginal injections of bichloride or carbolic solutions every six hours for the first two days, and with gradually diminishing frequency, until the lochia have ceased, and "the vulva is kept constantly bathed with antiseptic solutions, after cleansing with soap and water, and the frequent changing of the napkins."

We have let the President speak in his own words. One would suppose that he must have had some very unfortunate experiences in his own

practice, which has been largely among the prominent and wealthy, to make him adopt such a line of precautionary measures as he has here recommended. Had the noted Dr. Rutter of this city (who met with forty-five cases of puerperal fever in his practice in one year, while his neighbor, Dr. Klapp, did not see one among two hundred parturient women) only adopted these frequent manual ablutions, his women might have escaped the poisoning effect of the muco-pus which he blew into his handkerchief and thus soiled his fingers. But then he and his colleague, Prof. C. D. Meigs, did not believe in the possibility of conveying the infection. Dr. Rutter at last appeared to think that possibly he might carry the poison from one to another in his clothes; but it does not appear that he ever discovered the *fons et origo mali*; for, after having 95 cases in Philadelphia, he located in Chicago, where he had a like experience with his patients.

Although Eve was told that she should bring forth children in sorrow, it has only been recently discovered that her parturition bordered so closely upon the pathological, that she was in danger also of being poisoned by her own lochia. We have always thought that giving birth to a child was a natural act, and that nature was fully competent to restore the woman to her former state if let alone after her delivery; but it seems that we must have been in error. We have known a physician, whose practice in obstetrics was quite extensive, and among the same classes in society as Dr. Smith's, who did not have a death among his parturient women for 30 years, either from the direct or secondary effects of labor, although he never irrigated either the uterus or vagina. But then he was very clean-handed, as he did not make autopsies, handle pathological specimens, practice abdominal surgery, or attend hospital patients; he was an obstetrician, but not a gynæcological surgeon. This we conceive to be the danger in heterogenetic poisoning. It was the resident surgeon who alternated with the physician of the Pennsylvania Hospital, in attending the cases of labor that carried the poison which produced the endemics that at times closed the lying-in wards: and the reviewer was able to trace the cause of the outbreak of 1845 directly to his surgical colleague, and indirectly to an outbreak of erysipelas in his wards.

The Almighty must have made his work in woman very incomplete, if it is required that she should have all that Dr. Smith teaches, done to her, to save her from autogenetic infection, arising from her decomposing lochia and blood-clots. She might well exclaim, save me also from the physician, if she knew how often his hands become soiled with septic matters, when engaged in surgical work, and in gynæcological practice. We believe in prophylactic and later ablutionary antiseptic measures in hospital practice, and in the value of uterine washing in septic poisoning actually present; but we cannot see the propriety of, or the necessity for, the general city or country practitioner's washing out the uteri of healthy women directly after labor. It is certain that wonderful success has attended the obstetric practice of men largely engaged in it, in this city, who never washed out a uterus, and who therefore cannot see the importance of doing it.

"*Moot-Points in regard to Inversion of the Uterus*," is the title of an able paper contributed by Dr. J. C. Reeve, of Dayton, Ohio. The old, but still the prevalent idea with the unlearned, is, that uterine inversion is directly connected with parturition, that it follows immediately upon the delivery of the placenta, and that the fault of the accident lies with the physician in attendance. Fortunately for the obstetrician who may have

the misfortune to fall into the hands of the law, there is being accumulated a mass of testimony in his defence, showing that such an accident may occur long after labor, after the woman is to all appearances well, and even where years have elapsed since the birth. This paper of Dr. Reeve presents many of the strange phenomena of this accident, and may have an importance in medico-legal investigations, and suits for malpractice in the future. We present the points of the article as follows:—

1. *Uterine Inversion independent of Pregnancy, or Polypus; also existing in the Nulliparous Organ.* Puzos, 1774, is given as the first authority to the effect, that nulliparous women, and others not pregnant for fifteen or twenty years, might become the subject of inversion. Madame Boivin held the same view, and attributed the accident to pressure upon an organ rendered soft by long-continued hemorrhage. Dr. Reeve cites four cases. The first was that of a girl of 15, who menstruated regularly for seven or eight months, and then had a habitual flow for a long period, when she came under the care of Baudelocque, who found an inverted uterus behind a hymen. The os could not be distinguished, and the inversion appeared to be complete. Baudelocque thought it must have been congenital. *Case* 2 was a large, portly woman of 44, mother of three children, the last one born 15 years before. The inversion appeared to have come on gradually with "a sense of discomfort and heaviness in the pelvis and a dragging, in the lumbar region, especially after walking or standing." Boyer recognized the condition from discovering the os tincæ, and found that blood exuded from the tumor during menstruation. *Case* 3 occurred to the late Dr. Willard Parker, who removed the uterus under a mistaken diagnosis. The woman was a young primipara, and seven or eight years had passed since her delivery. The accident occurred suddenly while making a violent effort in rolling a ten-pin ball. She felt something give way within her, followed by intense pain, and became at once disabled.

2. "*Does Inversion of the Uterus always begin at the Fundus?*" This was long the universal opinion upon the mechanism of this accident, but since uteri have been found with a fundal depression, in some cases quite deep, and at the same time the evidences that the os tincæ still inclosed the inverted cervix, another view has also been held as to the initial step in the process. Dr. Reeve credits Tyler Smith with having been the first to advance the idea that the cervix may become inverted, while the body or fundus is still presenting upward into the pelvic cavity, as happens in intussusception and prolapsus ani. The cases in illustration are four, three of which have been given in an essay by Dr. Isaac E. Taylor. *Case* 1, by William Lawrence—woman, 33—had given birth to a child three years before, had always enjoyed good health, and only complained of a swelling in the privates. Tumor found protruding and as large as a fist, with a transverse fissure in the lower end. The os tincæ could not be felt but the union of vagina and cervix was distinctly marked. This protrusion had existed three months and was preceded for two more by a bearing down and uneasiness. Pressure upward with considerable force restored the organ. *Case* 2 was Dr. Taylor's own. The woman was a cook of 22, having an intact hymen. She had always enjoyed good health until her accident, which she attributed to carrying coal from the cellar. The fundal opening admitted a sound for three inches, and the measurement from the transverse orifice to the os tincæ was $1\frac{3}{4}$ in.; the whole mass was prolapsed. This patient was treated by position in bed and in $2\frac{1}{2}$ months entire reposition had taken place, with a sound measurement reduced to $2\frac{3}{4}$

inches. *Case* 3, by Dr. Ingleby. In this case the inversion occurred in a primipara, and was discovered on the eighth day after delivery; the body of the uterus was above the pelvic brim, and the os internum occupied the centre of the inversion, inclosing the tumor like a stricture. Pressure caused the stricture to give way in about five minutes, and reposition was found to have been effected. *Case* 4 occurred in the practice of Dr. A. Victoria Scott, the patient being known to the reviewer. The lady was not in good health, having suffered from chronic cystitis and leucorrhœa, and had aborted of a three months' fœtus, less than a year before. In the second pregnancy she again aborted at five months, and the os uteri remained very widely dilated. Through this, without any traction on the cord, the uterus became inverted, the cervical portion projecting beyond the fundus, and the os tincæ grasping the former, the mass protruding being much longer on the left than on the right side. Slight pressure caused the whole to become replaced with a jerk, as in the restoration of a caoutchouc ball after indentation. This woman has since then become the mother of two sons without any mishap.

3. "*Does Puerperal Inversion of the Uterus ever Occur except at or immediately after Delivery?*" This question has an important medico-legal bearing, as upon the answer rests the responsibility of the accoucheur in many cases. Was the uterus inverted at such a time that the accident should have been recognized and obviated by the attendant, or did it occur when he could not be held accountable for it?

Nine cases are quoted by the author upon this point. In Case 1, the symptoms indicate that inversion occurred after the patient was up, and the physician had ceased his attendance about two weeks, or twenty-five days after labor. In Case 2, the accident occurred at stool, two days after labor. In Case 3, the parturition was easy and natural, and the woman did well until after she was up, on the eighth day. Symptoms then arose which finally led to an examination, and inversion was discovered on the twenty-first day. In Case 4, inversion appears to have taken place at stool, on the eighth day. Case 5 arose from bed forty-eight hours after delivery, to have her bowels moved, and inversion resulted. Case 6 was examined on the sixth day, as she had once before had an inversion, and her uterus was found *in situ;* on the thirteenth day inversion again occurred. Case 7 was examined carefully at the close of labor, and uterus found firm and round; inversion found on seventh day. The remaining cases were to the same effect.

4. "*May Inversion of the Uterus take place without sufficient Symptoms to attract attention or to indicate that anything has gone wrong?*" Although the accident of inversion is usually indicated by alarming symptoms, and a large proportion may become rapidily fatal if not aided promptly, there have been cases where there was little change of countenance, no nervous distress, and no faintness. Two cases are cited in proof of this.

Dr. Reeve in closing, remarks: "The cases related show clearly that no aid can be relied on from the history of the case; an inversion of the uterus may have occurred at the last labor, and caused no symptoms of moment. The only safe clinical rule is to hold that a vaginal tumor may be an inverted uterus, whatever the condition or circumstances of the patient."

Dr. H. P. C. Wilson, of Baltimore, contributes a paper on "*Foreign Bodies left in the Abdomen after Laparotomy.*" This paper, with the additions made in its discussion, covers a record of 29 cases, 16 of them

European and the balance American. Mr. Tait reports ten cases where sponges were left. The remainder may be arranged as follows, viz., Sponge missed and removed, 5; Sponge discovered on autopsy, 9; Pair of forceps discovered on autopsy, 3; Sponge left and worked out in five months, 1; and forceps missed and removed, 1; total, 29.

In three cases a sponge had been torn without the knowledge of the operator, and thus the count failed to detect the oversight.

In Dr. Wilson's own case, the patient was five months pregnant when he removed an ovarian tumor, and left in a piece of sponge. The woman miscarried in eighteen days, and five months later the sponge was detected in an abscess and removed. The patient recovered and became more healthy than before she was taken sick. The loss of the sponge could not be accounted for.

Dr. T. Gaillard Thomas has a tag of tape, six inches long, attached to each of his sponges, as an additional safeguard against their being overlooked in the abdomen, and uses his hæmostatic forceps as short a time as possible. He believes that many more accidents than those collected have occurred.

"*Abdominal Section; its Value and Range of Application, as a means of Exploration and Treatment*," by C. D. PALMER, M.D., of Cincinnati. As it is the part of wisdom not to claim too infallible a diagnostic acumen in abdominal diseases, especially such as are dependent upon morbid growths, so it is also the part of candor to admit any errors that may have been committed in diagnosis, when such admissions may be used as profitable lessons by others who have entered the field of learning. Conferences held by medical men, whose positions as practitioners and operators enable them to recount their mishaps without fear, for the benefit of science, make statements which are often of more real practical value than those in which only the successes and triumphs of surgical treatment are narrated. No men of the present day seem more willing to give the benefit of their experience in failing to accomplish a purpose in operating, and the reasons therefore, than the gynæcological surgeon. Exploratory incisions as a means of positive diagnosis have really grown into favor in a few years, because of the discovery that such incised wounds were of much more positive value in the knowledge they gave in reference to the character of the morbid growth in question, than tapping, while at the same time they were, if anything, less dangerous than the latter. But how came this to be found out, and how did exploratory operations come to be considered proper and justifiable? Simply from the fact that such incisions were in general made under the intention of operating for the removal of something abnormal, which it was found could not be done with any hope of saving the patient, and that the said abandoned attempt was in a large proportion of cases recovered from. Exploratory incisions simply made as such, are rarely made, and yet a large proportion of the incisions through the linea alba are virtually tentative, the determination to complete the operation being contingent upon the correctness of a preconceived idea as to the nature of the growth to be removed, or the possibility of success in case of another form of disease being discovered. Thus, for example, we find that the first four extirpations of renal cysts on record were undertaken under the impression that the growths were ovarian.

Dr. Palmer recounts the diagnostic features, by which the characters of intra-abdominal growths are usually recognized, but at the same time

shows their fallacious character, as evinced by errors of operators having a large experience. Like Lawson Tait, he is opposed to tapping as a means of diagnosis, and prefers the exploratory incision, which is certainly growing into favor, since, by numerous tests, its danger is found to be much less than was formerly thought. It must, however, be borne in mind, that in calculating the risks of exploration, cases should not be counted, in which any subsequent attempt at removal has been made and abandoned.

He says that judged by accumulated experiences—

"tapping in a large proportion of cases in which it has usually been practised, is unnecessary, and superfluous for the purposes of diagnosis." "2d. That it is attended with such risks and dangers in its immediate and remote effects as to limit its employment to a minimum, only when absolutely necessary." "3d, That as the physical peculiarities of the fluids tapped, in point of color, odor, viscidity, and specific gravity, are not characteristic, nor the chemical product definite and unalterable, so the *microscopical evidences* as *interpreted* and *capable of being interpreted*, by *almost all observers and operators*, are *not positively trustworthy*."

Of rectal exploration he has little to say in favor, except that it has a theoretical value, which is outweighed by the risks in its practice. Such a means of exploration might be proper and of value under the tiny hand of Morisani, of Naples, but men of full size and stature have not his advantages in manual explorations, either vaginal or rectal.

The author's abdominal explorations are limited to five, in which he appears to have been more unfortunate in his results than in a number we have seen. The incisions varied from half an inch to four inches. No. 1, in a woman of fifty, was presumed to be ovarian, with ascites and probably malignant. It proved to be a malignant tumor of the mesentery. She died of exhaustion in three days. No. 2 was a malignant disease of the peritoneum, with ascites. Patient lived about a month. No. 3 had a malignant disease of the ovary with ascites. Was still living, but in very poor health, sixteen months later. The removal of the fluid caused her to improve in health for several months. No. 4 was over fifty, diagnosis confirmed, disease of omentum with ascites. Incision evacuated fluid and admitted the little finger; malignancy existed. Patient died in about a week. Case 5, in a boy of five years, cancer of mesentery with ascites. Death in seven days.

Mr. T. Spencer Wells had eighty-five exploratory operations with his one thousand ovariotomies, some of them were carried beyond exploration and then abandoned. Of these, thirty-three died.

Dr. Palmer enumerates the following, as the diseases calling for exploratory incision, viz., "*Ovarian tumors*," which are frequently complicated with pregnancy, ascites, peritonitis, malignant tumors, etc. 2. "*Certain interstitial and extra-uterine fibroids.*" 3. "*Certain cases of acute and chronic peritonitis.*" The incision is intended to be curative through cleansing and drainage. 4. "*Intestinal obstructions.*" The opening is here also intended for relief. He enumerates the agglutination of the ovarian stump to the intestines, adherent intestines, twisted intestines. 5. "*Chronic pelvic abscess.*" This may sometimes be evacuated with advantage through the abdominal wall. 6. Extra-uterine pregnancy." We cannot indorse the recommendation given, to perform primary laparotomy at term, if the child is alive, as there have been but two recoveries out of seventeen cases.

Dr. PAUL F. MUNDÉ, of New York, treats of "*Interstitial Cervical Fibroids as a cause of Dystocia, and their Removal by Vaginal Enucleation.*" He shows by the rarity of cervical fibroids, as evidenced by statistical records, that the neck of the uterus is an uncommon seat of this disease, while the body is quite the reverse; and that, consequently, the question of delivery where this growth is a serious obstruction, is one of the least common presented in parturition. Of the one hundred and thirty-seven cases in which the Cæsarean operation has been performed in the United States, only five were of the class of cervical fibromata, and but three of these are stated to have been interstitial. Eleven operations in all, in which the fibroids blocking the pelvis were uterine, resulted in saving three women and three children.

Fibroid tumors of the cervix have been at long intervals removed from women in labor by ligature and excision, during a period of more than a hundred and thirty years, but the operation by enucleation under similar circumstances is of comparatively recent date. Dr. Mundé gives a list of 9 cases, in 7 of which the latter method was adopted, to which he adds one of his own, and we add still another, making 9 enucleative cases, with the saving of 7 women and 2 children. One of the earliest of these operations was performed by Dr. Addinell Hewson (not mentioned in Mundé's list) of Philadelphia, in a case of labor under the care of Drs. Keating and Keller, on Feb. 14, 1858, and the woman was delivered later of a 9½ lb. fœtus, which was dead. After the delivery she had a violent flooding, but subsequently did well until the 16th, when puerperal fever of a phlebitic character set in, and death followed on the 21st, a week from the operation. The tumor was twenty inches in circumference and 2¾ pounds in weight. It was exhibited by Dr. Keating before the Philadelphia Pathological Society.

Dr. Mundé operated upon a patient in labor with a six months' fœtus on May 16, 1884, and removed a tumor weighing three pounds, the largest but one on record of fibroids enucleated during parturition. The woman made a good recovery, although much weakened by hemorrhagic and purulent discharges prior to the operation. The tumor was 8 inches long, 6 in breadth, 2½ inches antero-posteriorly, and 20½ in circumference. The Schroeder tumor (1882) was 6¼ inches long and 4¾ inches wide. The tumor in the Hewson case had escaped from the os uteri, but had a base of three inches in diameter. The Depaul tumor, which was sessile, and enucleated by the knife, weighed 3½ pounds. The woman lived two months.

There can be no question but that enucleation is the proper remedy in interstitial cases, but there are sub-peritoneal fibroids of the cervix and body, in which this operation is inadmissible. Where the tumor cannot be forced out of the pelvis, the next best operation is the Cæsarean section, as improved by Sänger, of Leipzig. The Porro method is not advisable, as has been shown recently by the difficulties encountered in the operation by Angus McDonald, of Edinburgh. The Cæsarean operation in fibroid cases has been very fatal, but there is no reason why it should be, to the extent recorded, but for the long delay usually made. There is now living in Indiana a farmer's wife who with her son nearly five years old, and both in good health, are trophies of the skill of Dr. Moses Baker, who delivered her by the Cæsarean section in Nov. 1880. Dr. Sänger[1] collected in 1882, a list of 43 so-called Kaiserschnitts, in

[1] Der Kaiserschnitt Bei Uterusfibromen.

which uterine fibromas were the obstacles to delivery, with a loss of 35 women and 28 children, but has mixed in his record true Cæsarean operation, Porro-Cæsarean, and laparotomies after ruptured uterus. Dr. Mundé has done service to the profession by calling attention to the method and promise of enucleation, as shown in his own and a few similar cases.

In the discussion which followed the reading of the paper, Dr. E. W. Jenks, of Detroit, added a tenth case of enucleation, which was operated on by him with success during labor, the tumor being small; and Dr. T. A. Reamy, of Cincinnati, an eleventh, saving mother and child. Dr. Byford was in favor of enucleating during labor and not earlier, as there was a danger of losing the fœtus by miscarriage, and tumors were crushed and forced out during the expulsion of the fœtal head. He had seen two such cases which terminated favorably, in one of which the tumor weighed 18 ounces, and the other he thought quite as large or nearly so, as Dr. Mundé's. He enucleated the second outside of the vulva, a portion of the cervix protruding.

Dr. T. Gaillard Thomas reports *six additional cases of extra-uterine pregnancy*. These with twenty-one previously reported make 27 cases in the experience of the writer, which under the calculation of Bandl, of Vienna, would represent between 300,000 and 400,000 gynæcological and obstetrical cases. Nearly all of the cases were seen in consultation.

Case 22.—Patient 27, a nullipara, married ten years, ceased to menstruate 4 months before. A Fallopian cyst presumed to have given way in the fourth week from a jerk and twist received by a car moving as she stepped from it. Was very ill afterward, with symptoms of pelvic peritonitis. Pelvis found filled with an undefinable mass. Aspirator used, and fʒiv fluid, like liquor amnii, removed. Violent pain set in and death resulted in twelve hours. A fœtus of 4 months was found in the Douglas pouch, and the abdominal viscera were matted together and covered with thick deposits of lymph.

Case 23.—Woman 32, also nulliparous, and married seven years. Fœtus believed to have escaped into the abdominal cavity by rupture of the cyst. A double-cell faradic battery used, with one electrode in the rectum and another over the tumor, the current being passed for five successive days, night and morning, and of sufficient strength to cause decided contractions of the abdominal muscles. Patient, after having been dangerously affected, entirely regained her health in a few months.

Case 24.—Woman also nulliparous, married eighteen months. A galvanic current used from 20 cells, interrupted 60 times a minute for 4 minutes, and then passed continuously for five minutes under ether. Tumor which was as large as two fists gradually diminished in size, pains became less frequent and violent, and she finally recovered.

Case 25.—Woman nulliparous, 4 months pregnant, tumor in Douglas pouch. Galvanic current employed; marked change in 48 hours, returned hon[illegible] days, a small hard nodule the size of a hen's egg finally remained. Patient entirely restored to health.

Case [illegible].—Woman 28, five feet high, 155 pounds weight, rupture of Fallopian cyst, laparotomy with exsection of fœtal mass performed by Dr. Briddon. Patient died of shock in 47 hours.

Case 27.—Woman 23; mother of a child 4 years old. Extra-uterine fœtus diagnosed at 9 months after quasi-labor and death of child. Waited three months, then performed secondary laparotomy. Placenta unusually

large, and attached to colon from caput coli to sigmoid flexure. After sewing attachment with cobbler's stitch, removed 4 lbs. of placenta, and puckered in the balance into the abdominal wound. Violent acute septicæmia set in in 24 hours, with pulse 150, and temperature 104.4°. Woman recovered in six weeks.

This was the fourth secondary laparotomy with recovery performed by Dr. Thomas, who limits the use of electricity now to about 4½ months. If the pregnancy is more advanced, he proposes to perform primary laparotomy and save the child at maturity. We wish him success when he makes the test of his theory, but he must remember that but two cases out of seventeen have recovered, and that extra-uterine fœtuses are often imperfect in formation. This was the case in one of the two deliveries which were not fatal, the fœtus having flat feet and an encephalocele.

The Proper Limitation of the Operation of Complete Vaginal Hysterectomy for Cancer of the Uterus is presented by Dr. PAUL F. MUNDÉ, of New York, who is opposed to the abdominal operation of Freund, on account of its great mortality, but is an advocate for extirpation by the vagina in the early stages of cancer, where the uterus is mobile, the vagina not too small, and the parts contiguous to the organ not involved; the object being to remove the entire disease in its local stage (*if it is ever purely local*), and thus not only relieve suffering, and prolong life, but entirely cure the patient. He gives an excellent description of the steps of the operation as learned by two tests upon the living, and reports his first and second cases of extirpation, dating since the last meeting of the society. He is opposed to all operations of removal where there are any evidences of constitutional taint, as shown by enlargement of glands, indurations, or otherwise. His first case, tested by the eye, showed no extension of disease to the parametrium, but a microscopical expert detected after the removal cancer elements therein, and foretold a return in two years. This condition did not prevent perfect union, an apparent restoration to health, and an appearance of soundness in the contiguous tissues. But at the end of nine months, having been carefully inspected every four to six weeks in the interval, there appeared "a slight induration in the left half of the cicatrix," and in 10 months and 16 days from the operation the record shows that there was "a cavity of the size of a fifty-cent piece, and an inch in depth, extending up into the cellular tissue under the stump of the left broad ligament." As the uterus and ovaries exsected weighed 7½ ozs., the involvement of parametrium is not surprising. The patient was 43, and a ten-para, with an ample vagina; the wound was closed with twenty silk sutures, and was practically healed on the sixteenth day.

The second operation was much more difficult, being performed on a woman of 30, and mother of one child, six years old, the vagina giving much less working space. The parametrium appeared healthy, no sign of infiltration felt by vagina or rectum. Operation after same method as before, on November 9, 1883; securing of arteries very difficult, from narrowness of vagina, and two that bled were hidden for a time under the speculum. Time of operation two hours. Pulse ran up in the night to 120; temperature rose to 103°, 104° F., and at the end of 40 hours, to 107.2° F., when she died.

As the results of the removal of the uterus, Dr. Mundé states that the record of Schroeder shows 129 operations for cancer in 8 years, with 28 cases remaining well after two years, and 24 after 2½ years. He also gives a table of 82 cases of removal, all by the vaginal operation, with a

recurrence in 47, dating from 2 months to 2½ years. There were 32 well after two years had passed.

As to the immediate danger of this mode of operating, he gives a tabular record of 255 cases with 72 deaths, the American portion being 21, with 10 deaths; per centage of the whole 28.23. Where the cancer is confined to the cervix (if this can be positively determined), Dr. Mundé thinks that the whole organ should not be removed, but the neck excised.

The reading of this paper provoked a discussion, the record of which fills sixteen pages of the Transactions. The general opinion was in favor of the operation under the limitations given. We do not regard the statistics yet taken as sufficiently minute. Given 100 cases (all recorded), how many have died directly from the operation; how many within a month; how many within six months, a year, two years, and three years, etc.? What is the average time between discovery and death in a series of cases not excised? When all of the operations are searched out and published, as the Porro operations have been in order, by the reviewer, Dr. Godson and Dr. Truzzi, it will be a simple matter to defend or condemn the vaginal exsection of the uterus as a means for curing cancer; as yet the operation is too young to establish a claim for success. There are old surgeons in our country, who after removing hundreds of cancerous mammæ, are satisfied that women who are not operated upon live longer on the average than those who are, and they decline to operate, where they think the advice will be heeded. Cancers have been removed from the breast, as soon as discovered, when very small and painless, under a fear of future trouble, when the character of the growth should be demonstrated symptomatically, and their removal has not prevented the return of the disease in a more decided character.

Dr. Edward Warren Sawyer, of Chicago, offers some "*Remarks on the Occipito-Posterior position in Vertex Labors, with an Analysis of Thirty-eight Cases.* He claims to have had these 38 cases in 183 presentations of the vertex: how many were seen in consultation he does not state. This number, according to Madame Boivin, would represent about 3400 vertex labors. This excessive proportion is certainly not in accordance with the ordinary experience of accoucheurs. Dr. Sawyer differs in opinion from most obstetrical writers in saying, "that when the occiput engages in the excavation in a posterior position, it persists in remaining, and is delivered in this position if no interference is made. Further, that it is the greatest rarity that the occiput rotates forward into the anterior half of the pelvis." In but two of the cases did such unaided rotation occur; the reason for this was, that assistance was given before the head had descended far enough.

The long forceps were used in 28 of the labors, short forceps in 3, Tarnier's in 4 (in 2 after rotation with hand in vagina), and Simpson's in one after manual rotation. Two women were lost, one from shock in 24 hours, and one from cardiac thrombosis in 4 hours. 32 children were delivered alive, and 28 were still living at the end of three days.

The views of the author met with much opposition, especially those adverse to the teachings ordinarily given in text-books upon the forward rotation in occipito-posterior positions: his early interference for the sake of the mother and fœtus were heartily concurred in.

Dr. Thadeus A. Reamy remarked:—

"Spontaneous rotation occurs when the presenting part has been pressed forward by the forward curve of the sacrum, which is unyielding, and when it can

no longer descend it is pressed forward. The curvature of the frontal bone glides up on the left, because the head cannot descend farther unless it so advances, and when it does ascend the left lateral inclined plane of the pelvis, the resistance offered by the pubic bone makes it imperative that it redescend, and so rotation occurs. I have repeatedly kept my position at the bedside, with my finger upon the presenting part, and watched this rotation; I have done it in more than twenty cases, and I am satisfied that it does occur, and that it does occur at this point."

Dr. A. H. Smith quoted Nägele to the effect that in only 17 cases out 1247 occipito-posterior positions did the head of the child fail to emerge, with the occiput under the pubic arch, and stated his belief that where it did not do this, either the head was proportionately small, or there was some other condition that acted as a preventive.

"*Insidious Septicæmia. A Rare, Deceptive, and Fatal Form of the Disease.*" Dr. George J. ENGELMANN, of St. Louis, remarks of the acter of this type of disease:—

"The very symptoms which are so common as to be among the first and most prominent indications of every disease, *fever* and *pain*, are the very ones most usually wanting; sometimes it is one, sometimes another, *the degree of danger being in inverse ratio to the intensity of symptoms.* The symptoms which do appear are certainly very much at variance with those ordinarily accepted as characteristic of septic poisoning; the absence of symptoms and the fatal result characterize this form of septicæmia and pyæmia. The disease may be of auto- or hetero-infection; it may begin with a chill or not. The most dangerous and invariably fatal cases are those in which all or a great number of symptoms are wanting; though I may say that all symptoms are rarely absent in one and the same case."

The characteristic marks of disease mentioned, are "a state of perfect contentment and well-being; the patient is satisfied with her condition; but also satisfied to be in bed." Another almost invariable symptom is—

"a slight looseness of the bowels, which will hardly be noticed, as it is not sufficient to attract the attention of the family or the practitioner. It is not diarrhœa, but rather a soft natural stool, perhaps not more than once or twice a day, wanting in all the characteristics of septic diarrhœa, without the foul odor which usually accompanies the latter. The symptoms most commonly absent are pain and elevation of temperature. The pulse is sometimes accelerated, but may be perfectly natural."

"The disease rarely begins with a marked chill; more commonly there is a chilly sensation, a feeling of discomfort with some little fever, such as might be indicative of a trifling ailment; and this first calls attention to the existence of some morbid condition; but these symptoms soon pass away, the anxiety of friends and physician is relieved; the patient is comfortable, quiet, but without ambition, perfectly content with her condition, supposed by all to be on the high road to recovery. In this state she remains, frequently without desire for nourishment, but, it seems, from a natural want of appetite; always feeling well, but slowly sinking until she passes away, only at times with violent symptoms at the last; more commonly comatose than in convolutions."

In the latter stages the temperature is liable to be subnormal, and there is no burning heat of skin.

Five cases are reported as examples, two of which are puerperal. *Case IV* was that of a primipara of 23, who died eight days after delivery, having during the last four days a temperature of 97.8° to 98.5° F., although her pulse ran from 124 to 128. Her abdomen was found distended with pus. In the early stage of her attack she had a violent chill, after which her pulse ran up to 140, and temperature to 103.2° F. This introduction

prevented Dr. Engelmann from being encouraged by the subsidence of pain and heat.

Case V was reported to the author as one of unaccountable death after labor. The patient was a 2-para of 25, and died at about the same time after her delivery, as Case IV. In her the abdomen was soft and not sensitive, lochial discharge slight—perspiration free but not offensive—and she expressed herself as "all right and comfortable." No autopsy was made.

Dr. W. L. Richardson had met with five or six of this class of cases, and had verified his diagnosis by autopsy. Dr. T. A. Reamy spoke of having also seen several, the main feature being absence of pain, and in some there was no acceleration of the pulse. Mental anxiety in the puerperal cases was a noticeable feature.

Dr. WILLIAM T. LUSK, of New York, presents "*A Note on the Ring of Bandl.*" From having been a believer in the statement of Bandl, of Vienna, that the upper part of the cervix uteri expanded so as to form a part of the sac for the fœtus as it neared maturity, and that the cervico-uterine limit was marked by a distinct ring, which has been called after his name, Dr. Lusk has been led by three carefully made autopsies in the cases of women who died in the last month of gestation, to abandon this belief and to teach quite the contrary. The following is a short note of what was found in each subject:—

Case 1. Coroner's examination; woman a primipara; no history; cervix found hypertrophied, and exceeded 4.5 cm. ($1\frac{3}{4}$ inches) in length; the plug of mucus terminated at the upper orifice, "and the membranes adhered closely to the lower segment and to the borders of the internal orifice." A most careful examination made by him and Prof. Wm. H. Welch "failed to discover the slightest trace of a second ring. The walls of the lower uterine segment were possibly a trifle thinner than those of the body, but there was no indication at any point of any appreciable change in either the mucous membrane or the muscular structure of the uterine walls."

Case 2. Also coroner's examination; woman a multipara; measurement of cervix and appearances the same as in Case 1.

Case 3. June, 1884. 12-para; died in the last week of gestation; cervix also $1\frac{3}{4}$ inches long; internal orifice closed; mucous plug ended at the termination of the canal; membranes found adherent to the borders of the internal orifice. Drs. Lusk and Janeway failed to find anything corresponding to the so-called ring of Bandl.

Dr. Lusk proposes in view of the above to abandon the terms "ring of Bandl" and "ring of Müller" and return to the more correct one of "os internum" "as expressing the true upper limit of the cervical canal."

Such very contrary opinions have been given after autopsies in different countries, that we are led to believe there is something in nationality and mode of living. No doubt Dr. Lusk is correct here, but may there not be different changes in countries where displaced kidneys and attenuated uteri are not uncommon in hard-worked multiparæ, especially of the peasant class?

"*The Non-Malignant Tumors of the Uterus, their Pathology, Diagnosis and Treatment,*" is the title of a paper by Dr. R. STANSBURY SUTTON, of Pittsburgh. We cannot do justice to this paper of seventy pages by any form of abstract. Dr. Sutton writes from personal experiences obtained by his own operations, and from observations made during a

long visit in Europe where he saw those of many of the most noted gynæcological surgeons of Great Britain and upon the Continent. He commences with the bibliography of his subject; notes the microscopical characteristics of benign tumors of the uterus; their peculiar appearances, density, etc., under the eye and touch; the methods of examining suspected patients; the best means of securing a differential diagnosis; and the most approved methods of treatment to establish a cure. The diseases treated of are fibro-myomata; divided into sub-peritoneal, interstitial, and sub-mucous, with the changes effected by fatty degeneration, myxomatous degeneration, calcification, cystic degeneration, induration, and suppuration. These are subdivided into growths affecting 1. The body of the uterus. 2. The cervix. We have read this paper with much interest, and commend it for its simplicity, clearness, and thoroughness, in treating of the class of cases once so fatal; always of interest from their dangerous character; and of later years especially so because of the wonderful progress made in their removal and cure under the knife; and because of the discovery of the arrested development and subsequent atrophic destruction of one variety, the interstitial, effected by the removal of the ovaries and Fallopian tubes, as inaugurated by Mr. Lawson Tait, on Feb. 11th, 1872.

"*The Clamp Suture and the Range of its Applicability, considered in Relation to the Cure of the Injuries incident to Parturition, with Statistics.*" Dr. NATHAN BOZEMAN, of New York, in an illustrated paper of 58 pages, shows the defects of the clamp suture of Dr. J. Marion Sims, in the treatment of vesico-vaginal fistulæ, and the superior character of the button suture designed by himself to obviate the deficiencies of the former, and with which he cured some of the cases in which the clamp suture had failed, after several trials. The paper was written partly in his own defence, and partly to establish his claim of originality in having designed the button suture and the preparative plan employed in anticipation of the operation for finally closing the fistulæ.

This volume under review is one of the most creditable of the series issued by the society. It contains a phototype of the late Dr. James D. Trask, and a fine engraving of the late Dr. J. Marion Sims, with an obituary notice prepared under appointment by Dr. Ely Van De Warker, of Syracuse, New York. R. P. H.

ART. XX.—*Diseases of the Tongue.* By HENRY T. BUTLIN, F.R.C.S., Assistant Surgeon and Demonstrator of Practical Surgery and Diseases of the Larynx, St. Bartholomew's Hospital, lately Erasmus Wilson Professor of Pathology at the Royal College of Surgeons. Illustrated with chromo-lithographs and engravings. Philadelphia: Lea Brothers & Co., 1885. Small 8vo., pp. 445. One of the "Clinical Manuals for Practitioners and Students of Medicine."

EVERY page written by so well known an author as Mr. Butlin is worthy of careful study although we may not assent to all his propositions. Such study is especially demanded for a work like the present, which seems to us both a welcome and important contribution to our knowledge of a

subject which has been too much neglected. It is true, that attention has been of late paid to the study of a series of affections which too often terminate in carcinoma linguæ, but these contributions are widely scattered throughout periodical literature, and nowhere heretofore could the student obtain the requisite information in a compact form. We do not say that most of the facts contained in this manual are not attainable, but no one, after glancing over the dozen pages of the mere bibliography of diseases of the tongue, will doubt that few would be equal to the task. This latter feature of the work is a most useful addendum.

Mr. Butlin, in his preface, unconsciously gives us one of the best guarantees possible that his work will be of value, when he says, that he has used his opportunities for years past in the out-patient practice of St. Bartholomew's in collecting notes and drawings of diseases of the tongue, "at first" without "any definite intention of publishing them, and certainly not with any intention of writing a book on *Diseases of the Tongue*." In other words, cases were noted and opinions formed from experience with no view of making them fit into new, preconceived, or extended theories calculated to form the foundation of a special treatise. Nearly all the admirable chromo-lithographs which really *illustrate* this book are of cases which have been under the author's own care, a few only being taken from patients in the service of his colleagues. The author is to be congratulated upon the liberality of the publishers in allowing his drawings to be most artistically reproduced; we have rarely seen better ones.

In an introductory chapter Mr. Butlin rather unnecessarily explains at length his reasons for adopting the arrangement of his subject matter, which is partly encyclopædic, partly dictated by convenience. Burns, scalds, stings, bites, wounds, and foreign bodies in the tongue, are considered in the second chapter. A concise account is given of the effects produced upon the tongue by the various corrosive poisons, which is supplemented by a table at the end of Chapter IV. on "tinctorial discolorations and stains from caustics," which is a modification of that of Rigal. In all hemorrhages, other than those due to the presence of foreign bodies, the flow should be arrested *thoroughly* and as soon as possible. When the wound is far forward, this arrest should not be difficult, but Mr. Butlin advises that anæsthesia and a gag be used, and full control be obtained of the tongue by two threads passed through either side of its tip; meanwhile the pressure of a pad of lint and the finger will temporarily suffice. If the bleeding be capillary or venous, coaptation by deep-sutures after the removal of all clots will suffice; if arterial, the vessel must be sought for and secured, the wound being unhesitatingly enlarged if necessary. In doing this, it must be remembered that if the bleeding be arterial the wound must be a deep one and the incisions accordingly profound. If these rather elaborate measures cannot be adopted owing to lack of assistance, digital pressure on a small piece of lint lodged in the deepest part of the wound must be resorted to, until proper assistance is attainable. Ligature of the lingual artery for primary hemorrhage is probably never demanded. Secondary hemorrhage must be treated on the same lines, but failure to secure the vessel in the wound may necessitate ligature of the lingual or even the external or common carotid; the latter, when the wound involves the tonsil or adjacent structures.

Sutures, other than for the arrest of capillary or venous hemorrhage, are only required when the parts do not lie naturally in apposition, or where

a segment of the tongue is almost separated; they should be passed deeply, the best material being stout silk, and in the case of children the operation may require anæsthesia. If seen later, paring of the edges and sutures are advised where the apposition is not good. Foreign bodies should be at once sought for and removed. A slight attack of secondary hemorrhage, a few days after the receipt of a wound, should at once excite the suspicion of the presence of a foreign body. If a wound, especially a punctured one, does not heal within a reasonable time and remain so, a foreign body should be suspected and sought for; this is all the more imperative, if an indolent tumor remain with a sinus leading down to it. It should not be forgotten that while the removal of foreign bodies usually terminates satisfactorily, yet occasionally severe and even fatal hemorrhage, due to wounds of the large vessels, has followed their withdrawal. Absence of the tongue, only one genuine case being on record, and bifid tongue, probably due to the dragging of a "too short frænum," we think are rather too elaborately discussed in the third chapter. Adherent tongue and its cure is spoken of. Division of the frænum for tongue-tie should not be done "if the fingers can be placed beneath the tip of the tongue, and if the tongue can be protruded so that the tip appears beyond the teeth." Tongue-swallowing is shown to be due to congenital elongation of the frænum or to a too free division of a contracted one. The condition is a very rare one, and should be treated by the introduction of the finger far back in the throat so as to draw the tongue forwards, and by prevention, *i. e.*, the substitution of the finger or nipple, natural or artificial, whenever the infant seems inclined to suck back its tongue. The occurrence of threatened attacks of suffocation in infants should at once cause the attendant to examine the condition of the tongue, as *perhaps* this rare abnormality may be the cause. A special chapter is devoted to discolorations of the tongue to which we must refer the reader who desires information. Acute glossitis is thought to be a catarrhal affection and is to be treated accordingly. Acute œdematous swellings of the buccal floor, acute ranula, etc., may give rise to some difficulty in the diagnosis of this affection. The description and treatment of glossitis, hemi-glossitis, lingual quinsy, mercurial glossitis, and gangrene contains much of interest, but we cannot do more than mention the fact.

Eruptions on the tongue, indentations, excoriations, furrows, grooves, wrinkles, fissures, and clefts, are well, but somewhat too minutely, described. Syphilis is shown to be the commonest cause of fissures and clefts, of which conditions two striking colored drawings are given. We shall revert to this subject later. Owing to the soft and delicate structure of its mucous membrane, the tongue is especially prone to ulceration. "With the exception of syphilitic gummatous ulcers, and, perhaps, of some or all of those which are tuberculous, all the ulcers of the tongue are, *primarily*, diseases of the mucous membrane." Ulcers are considered under the heads of simple, *i. e.*, those which cannot be ascribed to any definite or clearly ascertainable cause, traumatic, apthous, cancerous, tuberculous, syphilitic, and mercurial. It would be impossible, without exceeding legitimate limits, to give the author's treatment for all these conditions specifically, suffice it to say that his advice as to diet, drugs, etc., is eminently judicious and marked by an absence of any advocacy of personal or pet remedies; thus he says:—

"In practice I have sometimes found that the particular remedy which I thought applicable to a certain tongue, suited it far less well than another remedy

which *a priori* might have seemed unsuitable. I am therefore in the habit of employing first the remedy which seems most likely to be useful, the soothing remedies to the most irritable ulcers, the astringent to the chronic and less sensitive sores, and, if relief is not quickly afforded, of changing the local remedy until the desired effect is produced."

Solutions of chromic acid are highly thought of. Iodide of potassium in chronic glossitis of undoubted spyhilitic origin sometimes only increases the evil. Mr. Butlin has found, where the tongue trouble is associated with palmar eczema, or if other parts of the body are similarly affected, arsenic is decidedly beneficial. Even a mercurial purge should not be administered to children suffering from aphthous ulceration, owing to the possible risk of inducing gangrenous stomatitis. Speaking of traumatic ulcers, the author, while admitting that the more active of those produced by jagged teeth, etc., are largely attributable to the patient's general condition, denies that the more chronic and indolent are in any great measure dependent on the patient's health. We cannot here enter into the question of diagnosis, preferring to reserve our remarks for the chapter on carcinoma. The removal of all sources of irritation usually suffices for cure, but in chronic cases, especially in those over forty years of age, if the ulcer does not rapidly improve when the source of irritation has been removed, an excision, which includes about a quarter of an inch of the surrounding healthy tissues, is advocated, lest a mistake has been made, and the disease is really, or is becoming, carcinomatous.

The author thinks that there is not sufficient evidence to prove that the lung affection, which almost invariably terminates life in primary tuberculous ulcers of the tongue which are not operated upon, is due to contagious materials reaching the lungs; but the "probability that secondary tuberculous ulcers of the tongue are due to inoculation from tuberculous affection of the lung and larynx is much greater." In view of the facts that a primary ulcer *may* prove a source of infection, and that the disease is invariably fatal and the patient's life is rendered miserable while it does last, Mr. Butlin strongly advocates early and free excision. A small secondary tuberculous ulcer, "if the associated disease is not advanced, and the operation is likely to be well borne," should also be removed. Where only palliation is possible, much good advice is given as to food, etc., soothing alkaline or slightly astringent solutions are recommended, and the application to the carefully dried surface of the ulcer of the following powder is advised: Finely-powdered iodoform gr. j, morphia sulph. gr. $\frac{1}{6}$ to gr. $\frac{1}{3}$, sodæ biborat. gr. iij. The powder should be blown through a glass tube or dusted thickly over the dried surface of the ulcer three to four times daily, according to the effects produced; of course the amount of morphia must be varied to suit circumstances. Speaking of syphilitic ulcers, we can only mention a few of the many important points made by the author. Thus as to diagnosis he says, "the diagnosis is in most instances easy, in some instances impossible." . . . . "The entire absence, or the very modified character of the surrounding inflammation, may be almost termed a sign of syphilis." In most cases for a rapid cure, both local and constitutional measures must be used. Mr. Butlin says:—

"I have treated these patients with mercury for several months in succession without curing or greatly altering the sore places on their tongues. With the mercury I have then employed local treatment, and have seen the sores disappear within a week. Again, I have treated other patients with the same local

measures from the commencement, and have cured the sores within a week or ten days. On this account I look on local treatment as essential to the rapid cure of these affections."

The local treatment found most useful is chromic acid grs. x, aquæ ʃ3j, painted over the sore three to four times daily.

Tertiary ulcers result either from the breaking of large, deep gummata, or from a similar change affecting many smaller superficial ones. These latter form "irregular lines on the dorsum, hardly recognizable as gummata on account of their small size and close neighborhood to one another. They are more like hard and knotted cords in or immediately beneath the mucous membrane." Ulcers resulting from this latter form of deposit "may form long lines or fissures, more or less deep, running for the most part in a longitudinal direction, often sinuous and branched." . . . . "The diagnosis of the linear ulcers and fissures, when they are extensive and numerous, and especially when they are deep, is certain." . . . . "A single deep fissure may be due to tubercle or perhaps even to carcinoma; but the ploughed-up dorsum, such as one sees in old cases of syphilis, has no counterpart in any other disease." The chapter on "smoker's patch," leucoma or leucoplakia, ichthyosis, chronic superficial glossitis, ring-worm or wandering rash, mucous patches, tertiary syphilitic plaques, lichen, diphtheria, and leprosy of the tongue, is most interesting and profitable reading. Mr. Butlin contends that leucoma—under which term he includes smoker's patches, leucoplakia, psoriasis, tylosis, plaques opaline, etc.—occurs in several forms which are not necessarily directly connected with one another. "They are not all of them different stages of the same form of disease, although they all probably own one common cause." Tobacco is acknowledged to be *one* cause of leucoma, but neither the only nor a certain one, many smokers never having it, while it is not uncommon in persons who do not use tobacco. Other exciting causes are syphilis, frequent use of undiluted spirits, the taking of very hot and highly spiced meats or drinks, and the friction of rough artificial teeth-plates, etc.

The author agrees with Debove in thinking that there must also be some predisposing cause. This predisposition, Mr. Butlin thinks, consists in a peculiar thinness and instability of the mucous membrane, rendering it more easily irritated than in most persons, a condition analogous to that of those with delicate and irritable skins. Age and sex are also decidedly predisposing causes, for leucoma occurs far more frequently in men than in women, and is almost unknown in patients under twenty years, and almost as rarely commences in those over sixty. Not only the tongue, but the cheeks and inside of the lips suffer. The disease in exceptional cases attacks the gums and palate, while in one instance the female genitals were affected. As to recovery the author does not deny its possibility in confirmed cases, but much doubts its probability. We have dwelt thus particularly on the subject of leucoma because of its being an undoubted predisposing cause of lingual carcinoma, and Mr. Butlin thinks that this frequency, instead of having been exaggerated, has been rather underrated.

The different views held concerning the pathology of leucoma are discussed, and the author declares that he, with the majority of observers, is inclined to consider it a mild chronic inflammation of the mucous membrane.

As to curative treatment, the author, believing that confirmed cases are

incurable, advises only palliation, *i. e.*, the removal as far as possible of the conditions which seem to have produced the disease, the use of alkaline washes, and *perhaps* the removal of very thick and circumscribed patches. Indurations, warty growths, and very obstinate ulcers occurring in or upon such tongues should undoubtedly be early and most freely excised. In limited ichthyosis early free excision is recommended. Chronic superficial glossitis is next considered, and is thought not to be "more amenable to treatment than leucoma or ichthyosis" . . . and that "it may be the precursor and predisposing cause of lingual carcinoma, and that warty growths, indurations, and indolent ulcers which become indurated are to be regarded as in the highest degree suspicious, and to be treated on the assumption that they are cancerous if they do not quickly yield to simple treatment." Many pages are devoted to the consideration of so-called "ring-worm," or, as Mr. Butlin prefers to call it, "wandering rash." As it is practically uninfluenced by remedies, and is almost invariably a trivial affection, we think this a waste of space.

Mucous patches, which are elaborately considered, are stated to be no longer "bugbears," as far as treatment goes, since they rapidly yield to the application of a ten-grain solution of chromic acid, although all local sources of irritation must be removed, as a carious tooth for instance, and internal treatment likewise employed. Tertiary syphilitic plaques are carefully described by means of two illustrative cases, which will hardly bear abstracting, and an extended commentary. As this is an affection scarcely mentioned in works on syphilis or the tongue, the reader would do well to consult Mr. Butlin's account. For the interesting description of nodes—dental, tubercular, and syphilitic—the reader is referred to the original. Mercury is only serviceable in gummata when the patient cannot take iodide of potassium, or in those where the gumma has appeared early in the course of syphilis. Smooth patches, smooth tongues, atrophy, hemi-atrophy and hypertrophy are next considered. While interesting, the accounts of these conditions do not call for any special comment. The same remarks are applicable to the author's treatment of the following affections, viz., mucous cysts, blood-cysts, cysticercus cellulosæ, echinococcus, chronic abscess, ranula, dermoid cysts, and salivary calculus. We are rather surprised to find nothing said of certain of the bursæ, which may possibly present as tumors involving the tongue.

The chapter on innocent growths is excellent, and the only points requiring emphasis are "that the treatment of larger or doubtful warts in persons over forty years of age by caustics" . . . "cannot be too strongly deprecated;" and that it is well worth our while to try antisyphilitic remedies, and painting freely with a solution of chromic acid in cases even without a specific history, since such treatment has resulted in a cure in apparently non-specific cases.

The author now unreservedly admits that sarcoma of the tongue may occur, and relates two cases in addition to that of Jacobi's. Mr. Butlin denies that any other form of carcinoma than epithelioma occurs in the tongue. No part of the organ is exempt, although in most cases the sides are attacked. Age is a predisposing cause, since youth is absolutely exempt, "and the disease is so rare before the age of thirty years that the same statement might almost be made with regard to young adult life." Sex exerts a marked influence, since it occurs nearly six times oftener in males than females. This is probably due to the different habits as to smoking, drinking, etc., of the sexes. Syphilis, by producing superficial

inflammation, and by the scars left by old ulcerations along the borders of the tongue, predisposes to the after-occurrence of carcinoma. "But the ulcers and scars produced by syphilis are not more prone to become cancerous than the scars which are due to any other causes." The author thinks that too much has been made of inheritance as a predisposing cause of carcinoma, and that "if the theory of the inheritance of cancer rested on the family histories of persons with carcinoma of the tongue, it would soon cease to be accepted." Although a tolerably acute ulcer may be soon converted into a cancerous ulcer, this is the exception; the chronic, indolent sores which are irritated by carious teeth, spirit drinking, and above all, caustics, are those which take on malignant action. We here quote the italicized words of the author, since the point is of so much importance that it cannot be over-estimated: "*If there be one thing more harmful than another in the treatment of simple indolent ulcers of the tongue in persons over thirty years of age, it is the application of a strong caustic.*" Such applications in children or youths are useful, but when the carcinomatous age, so to speak, is reached, milder remedies should be resorted to.

The very different initial aspects of carcinoma of the tongue are not due to variations in the disease, but, as the author points out, to the engrafting of the malignant change upon such different conditions as the various chronic ulcers, fissures, old scars, and leucoma of the tongue. An enlargement of one of the glands beneath the jaw at an early stage of carcinoma, which has attacked a chronic ulcer, does not necessarily imply that the gland is carcinomatous; it may be simply irritated. The only pathological points of interest which the author brings out are, that none other than squamous-celled epithelioma has been ever proved to occur on the tongue, and that from the peculiar picture presented by microscopic sections the development of the ingrowing pegs of epithelium seems to occur "within or at least follows the route of the lingual lymphatics." This is of course not new, but goes to explain the comparatively early period at which the lymphatic glands are affected in cancer of the tongue. Mr. Butlin says that the examinations which he has made of old inflamed, scarred tongues, "even when they are apparently most healthy," reveals a possible explanation of the proneness of such tongues to become carcinomatous; for the "epithelium is found to be unequal in size, irregular in shape, containing vacuoles and larger nuclei than natural, often, indeed, two nuclei in a single cell." In addition the fibrous tissue beneath the epithelium is more vascular, and is infiltrated to a varying degree by leucocytes. When we reflect that the tongue, of all organs, has least opportunity to repair its injuries by rest, it is easy to understand why cancerous changes so readily attack its old, constantly irritated lesions. A curious point with regard to the enlarged glands is, that even after reaching a point where they ulcerate, suppurate, and continue to discharge for some time, they may yet, in rare instances, heal and shrink, although never entirely subsiding. Unoperated cases usually die within eighteen months after the first appearance of the disease either as a primary tumor or a carcinomatous degeneration of a chronic sore. Dissemination is a rare event.

From this and other facts, Mr. Butlin considers, and we agree with him unreservedly, "that carcinoma of the tongue is essentially a *local disease*, certainly not limited to that part in which it takes its origin, but yet surely to that part and the immediately adjacent parts, and to the

neighboring lymphatic glands." To only one of the diagnostic points have we space to advert, viz., to the examination of *scrapings* of suspected carcinomatous ulcers, not, of course, of non-ulcerated growths. Mr. Butlin maintains that among non-important structures, "holding the most prominent place, both in numbers and importance, are many epithelial scales, no longer normal, but differing widely from the normal epithelium of the tongue and adjacent parts in almost all respects. The cells vary greatly in size and shape." . . . "There may be two or three, or more, nuclei, and the nuclei, whether they be one or many, are much larger than those of the normal epithelium of the tongue." . . . "Mother cells are often present, and not uncommonly the cell-nests, which are so characteristic of squamous-celled carcinoma." The author does not advocate the use of the microscope to the exclusion of a careful examination of the general features of the disease, nor insist that it is infallible, but merely that it is a valuable aid which he and his colleagues have found decisive in certain doubtful cases. He maintains that, in the microscopic examinations of scrapings of "more than one hundred tongues, healthy and diseased in various ways, but not carcinomatous," he "never once saw anything which resembled a cell-nest." If confirmed, this is a most valuable observation. Does complete recovery ever follow operation, especially early operation? Mr. Butlin answers yes, and approximately estimates the recoveries amount to 10 per cent. It must not be forgotten, however, that the operation itself is not devoid of danger, a mortality of more than 8 per cent. resulting from it.

The question of treatment is rightly divided into the treatment of the so-called "pre-cancerous" stage of various tongue affections, and the therapeutics of the fully developed disease. For the former, the avoidance of stimulating and irritating foods and drinks, with the use of either the mildest astringents, or the radical removal of the trouble by knife or cautery is advised. It is impossible to do anything like full justice to the long and interesting chapters on the various operations and after-treatment, yet we cannot forbear dwelling for a short time on certain points which seem especially important. Mr. Christopher Heath's method of controlling the hemorrhage from a stump, by the pressure of one or more fingers passed behind the base of the tongue in the pharynx and pressing it forwards, is eulogized and declared perfectly efficient. In the treatment of congenital warty growths, it must not be forgotten that they may be derived from altered nævi, and may, therefore, be very vascular. The removal of large warty growths is best effected by resorting to the use of the galvano-caustic loop, although the knife or scissors may be used if the mouth be gagged and efficient control of the tongue be obtained by ligatures passed through its tip.

In tongue operations it is recommended to tie the patient's hands securely by a bandage drawn beneath the body, while the lower part of the thighs are to be in like manner secured beneath the operating table. By this means the mouth, etc., can readily be cleared of blood by twisting the patient's body over, while loss of control is avoided. "Too many, rather than too few, precautions should be taken in any operation upon the tongue." Morrant Baker's, Whitehead's, and Bryant's methods of removing the tongue are described and advocated as the best. If the floor of the mouth be much diseased, particularly if there is the least suspicion that the glands are affected, Kocher's operation, providing as it does for free drainage and thorough antiseptic treatment, had better be

resorted to. Of course a separate incision may be made to remove the enlarged glands, and an intra-buccal operation be done upon the tongue. Although hemorrhage, *per se*, is rarely a cause of death, yet a small loss of blood may prove to be a serious matter, as part is apt to pass down into the trachea and bronchi, there to decompose, causing affection of the lungs and septic poisoning. To these latter causes—the former being the more important—are due most of the deaths after removal of the tongue. The symptoms of septic pneumonia may occur within forty-eight hours, or not until later, but usually within the week. The mouth is horribly fetid and cannot be kept sweet, which doubtless has much, if not all, to do with the lethal result.

Careful study has of late years developed the important fact that most, if not all, of the causes of death after excision of the tongue are preventable. Although Kocher is the only surgeon thus far who has strictly carried out the Listerian method, Listerian principles as to dressings have proved eminently successful, as in Billroth's late use of iodoform gauze, wherewith the mouth is carefully packed. Kocher saved 13 out of 14 cases operated on, while Billroth's last 17 patients all recovered. As a proof of the good effected by iodoform, Woelfler and Paneth found that they could readily excite in animals a septic pneumonia similar to that in man by injecting certain decomposing fluids into the trachea, while the same fluids when injected *mixed* with iodoform proved innocuous.

Mr. Butlin remarks as to the choice of operations, "that the method of operating exercises infinitely less influence on the result than the after-treatment of the case." In uncomplicated cases first Baker's, second Whitehead's method seems preferable, with splitting of the cheek if the disease is not limited to the tongue. He is decidedly opposed to the galvano-cautery for removal of the tongue, but thinks highly of the cord écraseur. When the glands are involved, Kocher's method or a separate incision for the glands is recommended, through which the lingual artery may also be ligated if necessary. With the means now at our disposal for the control of hemorrhage, the author thinks that tracheotomy can hardly ever be necessary. Unless the disease has not recurred in the mouth, the glands are freely movable, and the health good, secondary lymphatic enlargements—due doubtless to glands overlooked at the primary operation—should not be meddled with. When the carcinoma recurs within the mouth, and the general health is not much impaired, provided the disease is fairly within reach, a second attempt at its removal is justifiable; but partial removals of the disease should never be attempted. As palliatives of the pain the thorough application of the actual cautery to the surface of the ulcer, and the division and possibly re-division after reunion of the lingual nerve are advised. Iodoform with morphia, and also salicylic acid are recommended to relieve fetor and pain.

The chapters on "Parasitic Affections of the Tongue" and "Fur" contain accounts of a rare case each of dracunculus and trichina spiralis. Mr. Butlin insists that his investigations prove that "fur" both in health and disease "is essentially a growth of fungus, chiefly of micrococcus and bacillus subtilis." Of the grounds for this belief we cannot say much. Nervous affections, including "spasm," "articulatory cramp," "involuntary protrusion of the tongue," "glossoplegia," and neuralgia, are thoroughly considered in a special chapter. It is pointed out that the treatment of the latter always extends over a long time, and that when any operation is demanded, stretching of the nerve is probably preferable to its section

or exsection. We say "probably," since nerve-stretching has only been tried in one case, so far, and time enough has not elapsed to prove its value even in this case.

We have now concluded our very imperfect notice of this valuable book. While we have not criticized it adversely to any extent, it must not be imagined that we unreservedly approve of it. Thus, we think that it might in many places have been condensed with advantage; that more repetition has been indulged in than was necessary; and that some few things have been omitted which might better have been discussed. In addition, the author indulges in certain inelegancies of style, such as "squirting" morphia into the tongue, which no author ought to permit himself to use.

On the other hand it is a work of sterling merit, unexceptionally illustrated, and a valuable addition to our surgical literature which no active practitioner should be without. C. B. N.

ART. XXI.—*A Guide to the Diseases of Children.* By JAMES FREDERICK GOODHART, M.D., F.R.C.P., Assistant Physician to Guy's Hospital, and Lecturer on Pathology in its Medical School, etc. Revised and Edited by LOUIS STARR, M.D., Clinical Professor of Diseases of Children in the Hospital of the University of Pennsylvania. With Formulæ. 12mo. pp. 738. Philadelphia: P. Blakiston, Son & Co., 1885.

THE book which heads this notice was written, as we learn from the preface, to meet the expressed want of many medical students for a manual upon diseases of children. It is very questionable whether such a want was felt by American students with so many excellent and recent text-books before them, but, be this as it may, we are not disposed to find fault with the author for adding another good book to the already long list in this department of medicine. Dr. Goodhart evidently intended that this manual should occupy a position between the too brief handbook on the one hand and the exhaustive treatise on the other, and this fact should be constantly kept in mind in our examination of the book.

The author has avoided the not uncommon error of writing a book on general medicine, and labelling it "Diseases of Children," but has steadily "kept in view the diseases which seemed to be incidental to childhood, or such points in disease as appear to be so peculiar to, or pronounced in, children as to justify insistence upon them." It is pre-eminently a book written out of the author's personal experience. But few references are made to current pediatrical literature. In reading this manual one is impressed with the fact that it is not a mere compilation, but the studied utterances of a man who has enjoyed exceptional opportunities for observing the diseases of early life, is a shrewd clinician, and possesses the ability to state the results of his observations in clear, concise, and pleasant language.

The American editor has performed his delicate task in an unexceptionable manner. His additions are made with discrimination, not too extended or numerous, and, in some instances, add very largely to the value and completeness of the text. The convenience of the American reader has

been consulted by rendering the expressions of the British Pharmacopœia, which are naturally used in the text, into those of the United States Pharmacopœia.

The introductory chapter briefly treats of those details which are so essential to the formation of a correct diagnosis for forecasting the issues of the case and for treatment. The necessity of methodical observation, the import of the various alterations in cry, expression, shape of head, and so forth, the best method of examining the several regions of the body, are clearly set forth, and the chapter closes with some general considerations upon the therapeutics of early life.

The "diet of children in health" next engages attention. We cannot now recall a better discussion of this important subject than is found here, though it could perhaps be extended to advantage. It would be well were its teachings thoroughly mastered by every mother as well as physician. However, it seems to us that the author is far too partial to the use of commercial baby foods. The occasions when it is necessary to resort to them are rare, in our experience at least, and it would be better were they totally banished from the infant's dietary. Full directions for the preparation of peptonized milk are given in the appendix, but less attention is bestowed upon its use in health and disease than its merits demand. How faithfully the following words reflect the experience of all who have much to do with the management of infantile diseases!

"Mothers and nurses will say a child cannot take this and that, because they have administered the thing improperly. But if the medical man insists on a return to such diet under strictly detailed conditions—nay, sometimes it may be necessary to make it one's business to see a child at its meals, and what it is eating—no difficulty whatever will be experienced in its digestion."

Under the head of "Diet Diseases," atrophy, flatulence, colic, constipation, diarrhœa, vomiting, indigestion, and stomatitis are considered; rickets and certain affections of the skin, which would properly come under this heading, are reserved for future discussion.

In speaking of wasting from insufficient food a timely warning is uttered against overlooking organic diseases of the lungs and pleura, which, in feeble, ill-nourished infants, often creep on insidiously, and of which wasting may be the only marked sign.

We turn with considerable interest to Chapter IV. on Diarrhœa to see what new light is thrown upon the management of the common and fatal summer epidemics. In our humble judgment no one can read this chapter without a feeling of dissatisfaction: it is too brief to do justice to the important subject of which it treats, and is certainly not written with that clearness and force which characterize other portions of the work. The editor, however, evidently aware of the imperfection of the text, has interpolated about nine pages of matter, giving a fair *résumé* of existing knowledge upon entero-colitis and cholera infantum.

In the treatment of intussusception opium and warm fomentations over the abdomen are first recommended. If the symptoms are not speedily relieved, efforts at reduction should be made under chloroform, by manipulation, by inflation, and by the injection of large quantities of tepid water. The latter is the most efficient, though not wholly free from danger. The ordinary enema apparatus is, however, usually inefficient, and it is recommended that the rectal tube be connected with an improvised water-cistern placed high above the bed by which more equable and forcible

pressure is obtained. The common fountain syringe fully meets all of the indications.

Laparotomy has been successful in only a few cases, and is only advised after a thorough trial of all other measures. The author strongly insists upon the importance of protecting the surface of the child from cold during the operation, a precaution often ignored by surgeons in this day of sprays and antiseptic precautions.

We would call especial attention to the discussion of the eruptive fevers. The chapters on measles and scarlatina will richly repay careful reading. Under the head of "Dropsy without Albuminuria," the author relates two interesting cases which came under his observation, and speaks of this condition as a not uncommon sequel of scarlatina. It may, however, be said that the connection of one of the cases with scarlatina is not proven. Several authorities are quoted, but no explanation of the etiology of these cases is attempted further than to remark that "it seems not unlikely from this and other cases that the dropsy is related to suppression of the urine." The editor, apparently somewhat skeptical, states, in commenting upon these cases, that he has never met with this condition, and very properly insists that the absence of casts should be proved by careful microscopic examination before declaring a dropsy following scarlatina to be independent of renal disease. He relates two cases in support of his proposition which are certainly not analogous to those reported in the text, and therefore not pertinent to the discussion. The rarity of these cases will perhaps justify us in briefly referring to one which occurred in our practice a few years ago. (See *Clinic*, June, 1874.)

A seven year old lad passed through a well-marked attack of scarlatina and was dismissed convalescent. On the seventeenth day his face and ankles were slightly œdematous. He vomited frequently during the night, and the next morning I found him feverish, his eyelids completely closed, face enormously puffed, and with an effusion into the chest and abdomen. He had passed no urine for at least eighteen hours, and careful percussion showed that the bladder was empty. A careful chemical examination of a small specimen of urine obtained soon after did not reveal a trace of albumen, and the microscope proved the absence of blood-corpuscles and casts. Other specimens were subsequently examined with the same result. He made a rapid recovery.

The chapter on Diphtheria is deserving of more than passing notice, partly on account of its intrinsic excellence and partly because some of the views enunciated are not in accord with those generally held by the profession. For many years we have believed that diphtheria is less contagious than is usually taught, yet we are hardly prepared to indorse the closing paragraph of the following quotation: "It is communicated by one patient to others by means of inoculation from a materies derived from the diseased parts, and thus doctors and nurses are chief sufferers; an imperfectly disinfected tracheotomy tube may impart it, and a healthy child put into a bed or a particular corner of a room recently occupied by a diphtheritic child may thus 'catch' the disease, but it is not communicated to other children or patients in a building, or carried about in clothing like measles or scarlatina." The editor enters a mild protest by stating, in a foot-note, that many authorities hold that diphtheria is contagious in the ordinary sense of the term. In view of the facts before us it is manifestly unwise to preach a doctrine which may be taken as an excuse for neglecting any precaution to prevent the spread of diphtheria.

Dr. Goodhart seriously questions the propriety of classifying diphtheria among the specific fevers:—

"Diphtheria is a contagious blood disorder—some would say a specific blood disorder—meaning thereby a disease due to some definite and constant germ, but I avoid the term specific, because there are peculiarities about the disease which must to some extent raise a doubt whether it may not result from varied causes."

The author is a believer in the non-identity of membranous croup and laryngeal diphtheria, but states that the distinction must rest on clinical and not on histological grounds:—

"My own opinion is that there are grounds sufficient for a belief in the existence of a non-diphtheritic membranous laryngitis, but, inasmuch as it is admittedly impossible to distinguish readily and certainly in doubtful cases between the two, and the question of contagion is involved in the decision, it is best to consider all cases as diphtheritic, and to take precautionary measures in accordance with that assumption."

The author is strongly committed to the doctrine that diphtheria is primarily a local disease, and consequently pins his faith to local measures in its treatment:—

"For treatment, then, first and foremost, I place local applications, undeterred by the fact that they have often proved ineffectual. And of local measures, I prefer the application of antiseptics rather than escharotics. They must be repeated as often as membrane begins to form on the surface. . . . The plan that seems to me best to adopt is to detach and remove any membrane that can be reached, and then to apply the local application. . . . It is advisable to apply our local applications as gently as possible. But the little bleeding that ensues upon detaching a thick flake of perhaps fetid membrane can surely be of but little importance, and supposing that the membrane forms again, things are not worse than they were before.

"I prefer a saturated solution of borax with soda, or boracic acid in glycerine, the solution being made by the aid of a water-bath, or a solution of permanganate of potassium, twenty grains to the ounce, or a ten-grain to the ounce solution of quinine, made by the aid of hydrochloric acid in equal parts of glycerine and water."

He prefers the camel's-hair brush to the atomizer for making these applications. We are greatly surprised to find no reference by either author or editor to the use of mercury in the treatment. The bichloride has been largely used of late years, especially in the laryngeal form of the disease, and the reports are certainly such as to entitle it to a place among the recognized remedies. When men of large experience, like Dr. Jacobi and others, state that more patients have recovered under treatment by the bichloride than from any other medication which they had previously employed, its omission from the list of remedies seems hardly pardonable.

Dr. Goodhart states, as the result of his observations in hospital practice, that a majority of the cases of diphtheria which prove fatal do so from laryngitis and extension of inflammation down the trachea. The author holds positive opinions in regard to tracheotomy. He considers the operation, both in its primary and remote effects, as a most serious one, and strongly condemns early operations. "The operation of opening the windpipe should be deferred to the latest possible limit." "It is, in fact, my belief that the broncho-pneumonia, the purulent bronchitis, the excessive tracheitis, so often seen in fatal cases of diphtheria, are chargeable quite as much to the operation as to the original disease." The only ground upon which he would justify an early tracheotomy is that it admits of the

more thorough application of local remedies to the larynx, a position in which he will find few followers among modern clinicians.

"When tracheotomy has been determined upon, the principle upon which success depends is to tamper with the tracheal mucous membrane as little as possible. To put a tube into the trachea and to leave it there, save for changing it occasionally, is but to exchange the risk of choking for the more deadly one of diffuse and ulcerative tracheitis. No doubt a certain sense of security is felt by the surgeon when a tube is safely in the throat, but it is dearly purchased for him by his patient, and the largest percentage of successes will certainly be procured by dispensing with the tube as much as possible."

Dr. Goodhart considers the time-honored division of pneumonia into lobar or fibrinous and lobular or catarrhal as misleading when applied to the pneumonias of early life.

The line of differentiation between the two forms of disease is less sharply drawn than by any author with whom we are familiar.

He admits that a pneumonia which has all of the clinical features of the croupous pneumonia of adult life is not uncommon in childhood, but states that even in these cases the lesion found after death is more often catarrhal than fibrinous.

"Nor is the difficulty lessened by appealing to the facts of morbid anatomy; for acute pneumonia, be it clinically lobar or lobular, seems to me to present such appearances in every case as make any distinction between the two forms, save one of degree, a very difficult matter. I am not familiar with the red and gray hepatization which are described as occurring in childhood as in adults, when the disease is of the fibrinous form."

The chapter on Pleurisy contains a very excellent *résumé* of present knowledge on this important disease. The author places much reliance upon a puffy appearance of the face, such as we meet with in acute Bright's disease, as indicating the presence of large effusions in the chest. Attention is directed to the altered resonance over the apex of the affected side as indicating the presence of fluid at the base of the chest. Whenever a high-pitched tympanitic note replaces the normal resonance of the apex, suspicion of a pleuritic effusion should be at once awakened; and it should require stronger evidence than usual to convince us that there is really disease of the apex in the presence of any dulness at the base. Dr. Goodhart discredits the doctrine that a serous effusion is the origin of most of the empyemas, and considers the cases exceptional in which a serous is transformed into a purulent effusion.

He is not an advocate for paracentesis merely because of the presence of fluid, but would only operate in those cases in which the effusion takes place rapidly, is in great excess, and attended with displacement of the heart, fever, pallor, and puffiness of the face. When assured of the presence of pus in the pleural cavity, he favors its removal by a free incision, combined with free drainage, by means of as large an India-rubber tube as can be introduced. He reports twenty-six cases treated consecutively in this way with only one death, and that case was complicated with suppurative pericarditis and peritonitis. His experience has been exceptionally pleasant. Washing out the pleural cavity, even when the discharge is offensive, is considered of doubtful utility, and not without risk to life. The drainage-tube is to be dispensed with as soon as possible. "Inefficient drainage is no doubt the cause of many a bad result, but it is equally true that many a case becomes intractable from the too prolonged use of drainage-tubes."

As to the value of the excision of one or more ribs, recommended so highly by many authorities, he says :—

"Applied to the majority of cases, the practice is unnecessary, and therefore bad. The treatment of empyema by incision, as I have just said, is as successful as it can reasonably be expected to be, if the cases are taken in good time; and in cases which have been long overlooked, or which have been long discharging, whatever we may do is, in the majority of instances, unavailing. The large aperture that is made by the removal of the rib quickly closes up, and we are no better off than before."

One hundred and twenty-two pages are devoted to the consideration of the diseases of the nervous system. The chapters on Meningitis and Chorea are deserving of special study. Simple meningitis is stated to be more common than is usually taught, and the too great tendency "to sweep all forms of meningitis of childhood into the net of tubercle" is deprecated. The diagnosis of meningitis is proverbially difficult. "There is no symptom which is infallible; there are no two or three which will not some time play us false; but the most reliable are retracted head, fever, causeless vomiting, irregularity of the pulse, and muscular rigidity or weakness." In the article on Infantile Convulsions, the use of chloroform or nitrite of amyl is not mentioned, assuredly our most trustworthy remedies for arresting the convulsive seizure. Dr. Goodhart does not believe in the common tradition "that chorea is likely to be set up in healthy children when they are associated with the choreic." He places rest in bed above all else in the successful management of these cases. "As regards drugs, if the case is in any way acute or violent, I order nothing, but the child is regularly shampooed twice a day for a quarter of an hour. This generally procures sleep. . . . When the more violent movements are quieted, then is the time to commence with drugs." Sulphate of zinc and arsenic have given the best results in the author's hands.

But want of space compels us to pass over many topics which are well worthy of notice.

A short chapter on diseases of the skin, about as satisfactory as such chapters usually are, followed by an appendix of formulæ, different from those found in the body of the work, concludes this excellent hand-book.

We have no hesitancy in recommending Dr. Goodhart's manual as a safe and reliable guide, and in many respects admirably adapted to the wants of the student and practitioner. The faults of omission, largely due to the effort to keep the volume within the designed size, are far greater than the faults of commission. However, they are few who will not be amply repaid for a careful reading of every page. W. J. C.

ART. XXII.—*Harveian Lectures on the Mode of Death from Acute Intestinal Strangulation, and Chronic Intestinal Obstruction.* Delivered before the Harveian Society of London. By THOMAS BRYANT, F.R.C.S., Senior Surgeon to, and Lecturer on Surgery at, Guy's Hospital. (Reprinted by the author from the *British Medical Journal*, November 22, 1884.) Small 8vo., boards, pp. 52.

THIS valuable contribution is so admirably condensed, that it will be impossible to give any adequate idea of the work without extensive quo-

tations. We shall therefore confine our remarks to some few of the more salient points, with the earnest recommendation to all of our readers in whose power it lies carefully to study the original.

The work is divided into three lectures, the first being on the "Mode of Death in Intestinal Strangulation and Intussusception, with Reference to their Treatment." "Hitherto it has been the custom to place cases of strangulation of the bowel amongst those of obstruction, indeed, to consider them as only one of its forms." The author regards this as a serious error, since, although in strangulation obstruction is present, it is only one of its symptoms, and "not the cause of danger or of death." On the other hand, in cases of intestinal obstruction, the obstruction is the prime symptom and danger.

Mr. Bryant throughout these lectures endeavors, and we think with a fair measure of success, to found his principles of treatment upon the information obtained *post mortem* of the pathological changes which tend to bring about the fatal issue. Such examination then reveals that death in "acute intestinal obstruction," which the author thinks should always be called "intestinal strangulation," is not from the arrest of the passage of feces, "but from changes in the bowel itself and the parts above." These changes are in brief those directly due to the interference with the return of the venous blood from the constricted portion of bowel; if this process be a slow one, inflammation may be a complication; if the interference with the return circulation be sudden, static gangrene results. In those cases where a sudden and complete arrest of the circulation takes place in the incarcerated portion of gut, hemorrhage into the bowel both above and below the point of obstruction not uncommonly occurs. This may be so considerable that both hæmatemesis and bloody stools may be noted, as in a specimen case reported by Mr. Bryant. Such a condition, although indicative of serious damage to the bowel, is not necessarily of fatal import, provided that other conditions are favorable.

As a proof that the mere obstruction to the passage of feces is of trivial import in intestinal *strangulation*, the author cites the well-known fact that all the symptoms of acute strangulation of the intestine rapidly disappear when a hernia is reduced by taxis or operation, yet in some such cases "no action of the bowels may be obtained for two to three weeks subsequently." In such instances the mere failure of the bowels to pass on and evacuate the feces produces no special symptoms. Ulceration, perhaps leading to perforation, and gangrene resulting in a general peritonitis, are the evils to be expected. This ulceration is caused in subacute cases by the pressure of feces upon the distended, and possibly inflamed, bowel above the point of obstruction.

How should these evils be combated? Assuredly, as Mr. Bryant ably contends, in an external hernia, none would think of giving drugs, regulated diet, etc., while leaving unaltered the mechanical conditions upon which all the symptoms depend. Were there any essential differences in the lethal pathological changes found after death from so-called internal and external strangulation there might be some hesitancy as to the proper treatment, but there are *none*. Whether the form of strangulation be a true "internal hernia, a volvulus or band, the mechanical condition called strangulation exists, and, unless this can be relieved, the end by death cannot be averted. To make a more special diagnosis as to the form of strangulation is not required; to wait for it, is often to wait for a *post-mortem* investigation." Mr. Bryant truly says that in a patient who has had an

old hernia, and who presents the symptoms of strangulated bowel, the surgical rule is imperative, viz., explore the hernia, then the neck of the sac, and finally the abdominal cavity. In cases presenting similar symptoms, but without any external hernia, the author hopes that before long a similar procedure, viz., an exploratory laparotomy, will become the rule in surgery. In both cases, as he frankly admits, a failure will often follow the attempt, but where success ensues, it is a life saved which would otherwise have been inevitably lost.

The argument that exceptional cases do recover without operation is no more valid than a similar one against herniotomy. Numerous illustrative cases from the *post-mortem* records of Guy's are then detailed. The success following operations upon "displaced herniæ" is another argument in favor of Mr. Bryant's position.

The examination of the records of the autopsies of a number of cases of intussusception shows that "death usually occurred from either gangrene of the entering or returning layers, or perforation by ulceration of the receiving, or external gangrene of the intussuscepted portion." Suddenly formed, these cases present symptoms similar to those of any other acute strangulation. In the more chronic form "inflammatory changes will have much to do with the pathology of the affection." In all cases these changes take place in the "receiving layer."

Inflation, in three of the twenty cases which Mr. Bryant has selected for examination, produced *rupture* of the bowel below the intussusception, while in a fourth, the child died in collapse shortly after the inflation. Hear what Mr. Bryant says regarding this method of treatment:—

"In acute cases it is hardly applicable," the condition then approaching very closely that of an acutely strangulated hernia, and requiring as active treatment. "In the more chronic cases, such as in severity seem to be parallel with cases of obstructed or incarcerated herniæ, running on to strangulation, inflation may be justifiable, and even successful; but then it must be employed" . . . . "within the first three days; later on, changes in the bowel are almost certain to have taken place, which would render the treatment by inflation or injection fruitless, and probably dangerous."

Mr. Bryant advocates early operation in the acute case, *i. e.*, as soon as the diagnosis is made, and "in the more chronic on the failure of inflation employed within the first three days." When from delay laparotomy seems unlikely to be successful, Nélaton's enterotomy is advised. The danger of the simple "opium treatment" is illustrated by a case. Speaking of the cases of rupture of the bowel by inflation Bryant says: "Might I ask could the operation of laparotomy have been more fatal in the cases than that of inflation proved? Might it not, with a great probability, if employed early, have been more successful?"

Summing up, the author lays down the following as rules of practice:—

"1. Laparotomy should be undertaken as soon as the diagnosis of acute intestinal strangulation is made. There should be no delay allowed for the formation of a specific diagnosis of its cause. It should likewise be proposed in all cases of acute intussusception, and of chronic, which have failed within three, or at the most, four days, to be relieved by other treatment.

"2. In all operations of laparotomy, it is to the cæcum that the surgeon should first advance, since it is from it that he will obtain his best guide. If this be distended, he will at once know that the cause of obstruction is below; if it be found collapsed, or not tense, the obstruction must be above. Adhesions or bands are, moreover, more frequently near to, or associated with, the cæcum, than with any other part of the intestinal tract. It is also in the right iliac fossa

that the collapsed small intestine in cases of acute strangulation is usually to be found; and with this as a starting-point, the surgeon will have less difficulty in tracing up the intestine to the seat of strangulation than if he begins at a distended coil, when it will be a matter of chance whether he travels away from or towards the special object of his search—the seat of obstruction.

"3. In a laparotomy, when the strangulated coil of bowel is gangrenous, it should be brought out of the wound, and the gangrenous knuckle resected. The proximal and distal ends of the resected bowel should then be stitched to the edges of the wound, and an artificial anus established.

"4. Nélaton's operation of enterotomy should be undertaken in all cases of intestinal strangulation, when laparotomy is rejected or seems to be inapplicable, as well as in cases of intussusception in which the invaginated bowel cannot readily be released. It should be performed in the right groin, or rather, right iliac fossa.

"5. If laparotomy succeed, the cause which called for it is removed, and the normal action of the bowel is restored. If resorted to early and as a rule of practice, it is probable that it would be more successful than the treatment by opium, inflation, or purgatives, which has hitherto been in vogue."

The second lecture discusses the important questions: "How does obstruction of the intestines destroy life? What changes does it bring about in the bowels which tend towards death?" The answer to the first is, that the lethal issue may be due to exhaustion produced by the inability to take or retain food consequent upon vomiting; to the second, that from the back pressure upon the gut above the obstruction, peritonitis results, all the more certainly if ulceration, sloughing, or rupture of the colon occur from over-distension.

It will thus be seen that the main causes of death are the secondary changes which take place in the bowel above the seat of obstruction. In proof of this, the author relates the histories and *post-mortem* examinations of a number of cases of the most typical of all forms of pure obstruction, viz., those of congenital malformations of the rectum, where death invariably resulted from peritonitis due to changes in the bowel. While reviewing this book we ourselves have lost a patient from this complication upon whom we had performed a Littré operation or rather Huguier's modification, *i. e.*, the incision on the right instead of the left side. It should not be forgotten also that simple *fecal impaction* may prove fatal, thus emphasizing the importance of a digital examination of the rectum in all cases of obstruction of the bowels. Illustrative cases are cited. A number of *post-mortem* examinations are detailed to prove how, from obstruction due to any cause, either the cæcum or colon may slough, rupture, or ulcerate, "as a direct result of the pressure backwards."

From Mr. Bryant's investigations he comes to the conclusion "that one-third of the cases of stricture of the rectum or lower bowel are not cancerous," a most important practical point with regard to treatment; and he goes on to show by cases how the ulcerations heal after colotomy. Of course this fact is known to practical surgeons, but certainly seems to be overlooked by many practitioners. For the practical points which Mr. Bryant gives for the determination of cancerous and other forms of stricture of the bowel, we must refer our readers to the text.

Mr. Bryant, in a few paragraphs, succinctly explains how strictures are formed, and why and how colotomy proves curative in other than cancerous cases. Excellent advice is given as to the treatment of cases of incipient stricture, viz., regulated diet, rest in the horizontal posture, and laxatives, such as enemata of olive or castor-oil in the commencing stage of obstruction. Purgatives are unreservedly condemned as productive of

forced peristalsis of the bowel above the stricture. Belladonna combined with opium is thought highly of. "The use of enemata administered through the long tube is dangerous; in some cases, they may give undoubted relief, but in others they cause rupture of the bowel or perforation, and, as a result, fecal extravasation and death." We shall quote the author's conclusions, premising that the results claimed are fully borne out by the tables of cases appended—eighty-two—all operated upon by Mr. Bryant himself, and that these do not adequately convey an idea of the benefits conferred on the patients by colotomy, unless the text be also read.

"1. In all cases of cancerous stricture of the rectum or colon, including the annular, which are not amenable to lumbar colectomy or anal excision, right or left lumbar colotomy is strongly to be advocated, with the well-grounded hope of relieving suffering, retarding the progress of the disease, and prolonging life even for five or six years.

"2. Lumbar colotomy is valuable as a curative operation in syphilitic and simple ulcerations of the bowel which resist other treatment, including cases of recto-vesical fistula; and it is remedial in examples of volvulus of the sigmoid flexure, as well as of obstructions caused by tumors.

"3. To secure these advantages, it is necessary for the operation to be performed before the pernicious effects of obstruction occur."

Those who desire proof of the above propositions are referred to the text. One point we cannot forego mentioning, viz., that certain cases which before operation have been supposed to be undoubtedly cancerous, have entirely recovered, as far as the ulceration goes, after operation, as in one of Mr. Bryant's cases, who fourteen years later was in robust health.

The author calls attention to the best means of preventing the passage of the feces past the lumbar opening into the rectum. This is not sufficiently provided for in any of the ordinary operations, although practically such a result is attained in most cases. Mr. Bryant has recently in two cases operated in the following manner, which, he says, has proved "eminently satisfactory." The muscles were freely divided down to the lumbar fascia, which, after hemorrhage had been arrested, was divided, thus exposing the bowel, which was separated from its connective-tissue attachments, so as to project well from the wound. Sufficient traction was then made upon the pelvic end of the gut to enable the operator "to bring outside of the deep orifice of the wound a complete knuckle of intestine, with its outer surface on a level with the skin-wound." Lint spread with vaseline was applied next the wound, outside this iodoform gauze, and outside all a mass of Gamgee-tissue, secured in place by an abdominal bandage, the turns of which passed *above* and *below*, but not *over* the lumbar incision. No bowel-stitches were used. In one case on the fourth, in the other on the fifth day, the gut having become adherent to the skin-wound, a small incision was made into the bowel by means of a tenotome; all the feces continued to pass through the anal wound. Mr. Bryant points out that these two cases, though promising, are not conclusive proofs that the feces will always be diverted from the rectum, and says, moreover, that this plan cannot be carried out in all cases.

The concluding lecture is devoted to the "Differential Diagnosis of Acute Intestinal Strangulation and Typhlitis." Mr. Bryant regards sudden perforation of the intestine from ulceration, an acute attack of peritonitis following some cæcal or pericæcal trouble, or an acute attack of gall-stones as the only conditions liable to be confounded with acute strangulation.

We confess that there are other conditions which have puzzled us, but as we are not writing an essay, but noticing a book, we shall do no more than call attention to the fact that others, less experienced than Mr. Bryant, cannot make a diagnosis as readily as he professes to do.

In perforation of the bowel, *collapse*, like that of cholera, is the first symptom, while the collapse of strangulation is slower, both in its onset and progress, never reaching the same degree as that of perforation until death of both bowel and patient is at hand. Two cases of perforating ulcer of the duodenum illustrating these points are cited.

The histories of many instructive cases of perityphlitis, inflammation of the appendix, perforation of the cæcum, etc., are given quite fully, the main deduction drawn being that the only symptoms common to acute strangulation and perityphlitis are "sudden acute abdominal pain and vomiting; and that whereas in intestinal strangulation these symptoms come on usually in a patient who has been hitherto perfectly well, in cases of typhlitis, on the other hand, there will either be a history of local trouble or other symptoms to point to it." Of course the common diagnostic points usually found are adverted to.

"In the subacute cases, suppuration may burrow backwards towards the right loin, upwards towards the liver and diaphragm, or downwards towards the pelvis or thigh, or inwards towards the umbilicus. In some cases it will burst into the bowel. In every case, if left alone, acute peritonitis, grafted upon chronic, will bring about death." "Taking as our guide the causes of death, I am disposed to think the indications are tolerably clear;" . . . "they all point to an early incision made in the neighborhood of the cæcum for the evacuation of early inflammatory products in acute cases and of pus in chronic."

In all cases not yielding rapidly to medical treatment, Mr. Bryant advises cautious incision somewhat after the manner of tying the external iliac artery, and the evacuation by dissecting with the finger of any inflammatory products which may be found. When the cæcal appendix is involved resulting in localized peritonitis, Mr. Bryant says, with reference to opening the peritoneal cavity:—

"For my own part, I can see no practical objection to the procedure; since, if the case be left alone, a diffused peritonitis is sure to follow the local one, and, as a result, death."

Among the fatal cases of cæcitis is one where death resulted from hemorrhage due to ulceration of the deep circumflex iliac artery. This is a very rare complication, and we should here like to put a somewhat similar one upon record which we saw in consultation the day before commencing this review. Two hemorrhages—the first quite a severe one—coming from what vessel it was impossible to ascertain, took place in the case of a patient in whom a spontaneous opening of the abscess had taken place to the outer side of the femoral vessels, an inch below Poupart's ligament. Pressure and styptics—chiefly the latter—had arrested the hemorrhage before we were called in, and the arrest has proved a permanent one.

In concluding our remarks, we cannot but express our envy at the almost unexampled experience which has fallen to the lot of Mr. Bryant, and our conviction that he has made the best of his opportunities. If we might venture a criticism, it is, that active surgical interference seems to be urged to its extreme limit. Perhaps, when advocating an advance, an extreme position must be assumed in order, figuratively speaking, to drag the mass of the profession—who are reluctant and timid—even a few

steps forwards. But we cannot overlook the fact that that which is safe and proper advice to give to the experienced and wary, is the very reverse for those who lack these safeguards, for we have seen already too much of this rash and reckless cutting into cavities which we think ought to be still held in some respect, even if not worthy of the dread veneration with which we formerly regarded them. C. B. N.

ART. XXIII.—*Bacteriology.*

Researches upon the Common Bacilli of Cholera Asiatica and of Cholera Nostras. By FINKLER and PRIOR.

Ergänzungshefte zum Centralblatt für allgemeine gesundheitspflege. Bd. I., Heft 5 and 6. Bonn, 1885.

The Technology of Bacteria Investigation. Explicit Directions for the Study of Bacteria; Their Culture, Staining, Mounting, etc., according to the Methods employed by the most eminent Investigators. By CHARLES S. DOLLEY, M.D. 12mo., pp. xii., 263. Boston: S. E. Cassino & Co., 1885.

Pathological Mycology. An Inquiry into the Etiology of Infective Diseases. By G. SIMS WOODHEAD, M.D., F.R.C.P. Ed., and ARTHUR W. HARE, M.B.C.M. *Section I., Methods.* With sixty illustrations. 8vo., pp. x., 174. Edinburgh: Young J. Pentland, 1885.

FINKLER and Prior have recently published the results of their last work upon the comma bacilli of cholera Asiatica and of cholera nostras. These observers will be remembered as having discovered a curved bacillus in the dejecta of persons ill with cholera nostras in an epidemic of that disease in Bonn last fall. The microscopic appearances of this organism were so similar to those of Koch's bacillus of cholera Asiatica that it was at first considered to be identical with the latter. Certain differences in its behavior under cultivation, however, seemed to point to the existence of a specific difference between the two, and the work before us is the result of an attempt to prove exactly what these differences are. An exhaustive account of the discovery and morphological properties of the two organisms is given; and a full description and tabular statement of all the inoculation experiments performed form a large part of the work. As a summary they give the following conclusions:—

I. They confirmed the occurrence of Koch's comma bacillus in the intestinal contents and in the dejecta of cases of cholera Asiatica in the epidemic in Genoa in 1884.

II. They also found comma bacilli in the dejecta of patients ill with cholera nostras. This they did by direct microscopic observation, and they also obtained them in pure cultures, and observed their peculiarities.

III. The two comma bacilli are vibrios which form genuine *spirilla*. The two vibrios are similar as well in this stage as in the variations from this form which they pass through.

IV. Their behavior under cultivation in most culture-media is the same. A very slight difference appears under varying culture-media and temperature, and this difference is a *relative* and not an absolute one—

being a greater energy of growth and vitality in the vibrio of cholera nostras.

V. They determined very carefully the *marked resistance* of the two vibrios to drying, varying temperature, and "Fäulniss."

VI. They admit the possibility of a "resting-stage," and think it probable that this resting-stage is similar to the spore-formation of other micro-organisms.

VII. *Both vibrios are pathogenic.*

VIII. The pathogenic power of Koch's vibrio is greater than that of Finkler and Prior's; here also the difference is only relative.

IX. The specific power is not active against all species of animals, a large number of which possess an immunity against both vibrios. When it is active it is only under certain conditions. The susceptible animals and the conditions under which its activity is best seen are the same for both vibrios.

X. The symptoms produced by the vibrios in the bodies of animals are very similar to those of cholera in man; they are not however specific, since they can be produced in guinea-pigs by other infectious materials and chemical substances.

XI. The specific relationship between the comma bacillus and cholera Asiatica is rendered probable by its constant presence, but it has not been rendered certain by the experiments upon animals.

The specific relationship between the comma bacillus of Finkler and Prior and cholera nostras is rendered probable by the observation of the micro-organism and also by the slight differences between the two diseases, as well as the biological and pathological similarity of the two comma bacilli.

XII. The two vibrios can pass into the blood after injection into the intestine, and be excreted in the urine. The situation of Koch's vibrio in the body of an animal increases its rapidity of growth, so that a new similarity under cultivation is established between the two vibrios.

As this is the most complete work upon the subject of the relationship between these two organisms yet published, or likely to be published, so does it furnish the best idea of the two that has yet been given. As will be seen, the authors abandon any claim of identity for their discovery with that of Koch. They merely show the very great similarity between the two bacteria, and by so doing offer the most complete justification for their first thought that the two comma bacilli were identical. Having done this much, they are certainly entitled to all the credit for the isolation and study of a new form of vibrio that would be given to any other workers in the same field. Their results are the results of patient research, and are the more creditable because reached under somewhat trying conditions. They publish a number of very beautiful plates of the microscopic appearances of the two organisms as observed under different conditions of cultivation, and of occurrence in the animal body.

They devote a small amount of space to Emmerich's bacterium, which they consider to be merely an accompaniment of the disease, and to have no specific influence upon it.

Their conclusions are different from those of Koch in some minor particulars, but on the whole support his assertions. The work is exceedingly creditable to the authors, and in refreshing contrast to some other productions upon the same or similar subjects.

The other two works whose titles are given above are the latest addi-

tions in English to the literature of bacteriology. Neither of them represents very much in the way of original work, but both are issued for the purpose of aiding such work.

Dr. Dolley's book is "presented with the hope that it will stimulate careful study of the schizomycetes by American investigators."

The subject is considered under three heads. 1. General directions. 2. Special methods for investigating pathogenic bacteria. 3. Formulary. Under the first head are given concise directions for the study of bacteria in general, and various ways in which they are collected or observed in air, water, earth, or animal tissues. The methods of preparing specimens for microscopic examination, section-cutting, and photographing are explained. Cultivation experiments in all their various forms are described, and this part is concluded by a short mention of the way in which inoculation experiments should be performed, and of biological analysis.

The various diseases which have been connected with bacteria are taken up in alphabetical order in the second part of the work, and pretty nearly every one who has had anything to say upon the subject is given a hearing.

The last division contains the formulæ of all of the staining fluids and culture-media in common use in investigations upon bacteria. In the composition of the gelatine culture-medium, however, we regret that the commonly accepted ten per cent. of gelatine is not accepted, for uniform results can be obtained only by the employment of identical methods by all observers.

The book is unpretentious, and of course will find its widest usefulness among students. Therefore the lack of discrimination between the value of various methods is open to severe criticism. The time has passed when no selection between good, bad, or indifferent should be made. As it is meant especially for an American public, it might have been well also to advise the beginner that it is not necessary to send abroad for the materials used in this kind of work, inasmuch as they can all be obtained in this country.

The form of the book is inconvenient for the laboratory, and its size and consequent cost are increased by the unreasonable amount of space devoted to the literature, the references being printed in the same type as the text, and occupying fully one-third of the entire volume.

Of Woodhead and Hare's work the first part only has yet reached us. It is to be divided into two volumes, the first devoted to "methods;" the classification and consideration of the properties of the pathogenic bacteria are to follow later.

The preface of the part before us states that one object of the work is "to show how extremely simple are most of the methods of research," and to "point out that artificial cultures are easily made." We understand that the book has not met with much favor on the Continent, and certainly such statements as these would make an unfavorable reception probable. We cannot record our objections to them too strongly, and we must confess our inability to believe that a prolonged practical acquaintance with the subject could lead to any such conclusion. Certainly this opinion might be supported from the text itself, for nowhere is there to be found evidence of original work upon the part of the authors.

The book contains a discussion of the position of bacteriology at the present time; a short explanation of the methods of examination, microscopic and otherwise; of the solid and liquid culture-media employed,

amongst which are some which are practically obsolete; and of the methods of separating micro-organisms from the tissues. There are also two appendices, containing a short description of certain fungi commonly found in laboratories, and an extensive and somewhat inconveniently arranged literature of the subject. There are sixty illustrations, varying from good to very bad. The chromo-like pictures of potato cultures, pp. 60–61, are especially bad.

The demand for a good work upon this subject in English cannot be said to have been filled by either of the books under consideration. Taken together, however, and under critical advice, they will be of service to the student who has not a working knowledge of German and French.

H. C. E.

ART. XXIV.—*A Practical Treatise on Nasal Catarrh and Allied Diseases.* By BEVERLY ROBINSON, A.M., M.D. (Paris); Clinical Professor of Medicine at the Bellevue Hospital Medical College, New York; Physician to St. Luke's and Charity Hospitals, etc. etc. Second edition, revised and enlarged. With one hundred and fifty-two wood-engravings. 8vo. pp. xii., 276. New York: Wm. Wood & Co., 1885.

FIVE chapters have been added to this excellent work, and the text of the first edition has been subjected to revision and amendment, with the introduction of new material where the advance of knowledge has rendered such additions necessary. The new chapters are devoted to the study of 1. Aural Complications of Catarrhal Inflammation of the Nose; 2. Deflections of the Nasal Septum and Bony Obstructions of the Nasal Passages; 3. Ulcerous Coryza; 4. Adenoid Vegetations at the Vault of the Pharynx; 5. Mucous Nasal Polypi.

Dr. Robinson's style of writing is diffuse, and his treatise would have gained more from judicious erasure than it has from some of the material added. In many places, too, the additions are too obtrusively interjected, as if time had been lacking to fit and adjust them properly. While these faults detract from the pleasure with which the book is read, they are, after all, insignificant in comparison with the many positive merits of the treatise. Dr. Robinson is a careful student and a conscientious teacher. Avoiding extravagant and indiscriminate laudation of his plans of practice, he nevertheless expresses clearly and decisively his appreciation of the value of agents and methods which experience has commended to him; and with equal frankness sets forth his disapproval of procedures which have failed in his hands to produce the results claimed by their advocates. Everything new receives his consideration, whether or not it meets his approval. Indeed he has in many instances shown a leniency to ill-judged and often dangerous practices recommended by recent writers—recommendations in marked contrast with his own conservative teachings—that a personal familiarity with the results of the treatment would not have permitted.

The anatomy, physiology, and pathology of the nose are well studied, and the hygienic directions under the head of "prophylaxis and treatment of coryza" form one of the most valuable portions of the book. In the

treatment of acute coryza, the author is apparently not aware of the abortive value of atropine in small doses, frequently repeated. Acute coryza is regarded as contagious, even when not part of an epidemic of influenza, measles, etc. We doubt the general acceptance of this view by the profession.

Chronic coryza is divided into two forms, humid and dry. Dr. Robinson does not indorse the pathological views which regard hypertrophy of the turbinated bodies as a normal sequel of simple chronic rhinitis—or, as he prefers to call it, chronic coryza. In many instances he attributes this condition, at least "in part, to a mischievous therapeutic method previously adopted . . . . the repeated applications of douches, injections, or sprays to the Schneiderian membranes."

However true it may be that in Dr. Robinson's experience patients suffering with chronic turgescence or actual thickening of the mucous membrane of the turbinated bodies have previously been treated either by themselves, or by their medical advisers, according to some one of the plans disapproved by him, it is equally true that in the experience of others many such patients have previously received no treatment whatever. Nor can we agree with his sweeping condemnation of "douches, injections, and sprays," all of which methods of treatment are useful within proper limits, and often in our experience indispensable.

In the local treatment of chronic coryza, the author recommends the insufflation of powders, occasionally resorting to a detergent or disinfectant spray for cleansing purposes, but especially avoiding the routine use of the latter as urged by many eminent authorities. In addition to local medication by powders he addresses suitable remedies to the constitutional diathesis, when he finds syphilis, scrofula, or herpetism present. It is to be regretted that the name of a proprietary preparation mars the pages upon which he gives formulæ for some of the few sprays he considers admissible. As to the merits of the preparation in question, its therapeutic virtues are certainly no greater than those of carbolic acid, chlorinated soda solution, or a dozen other well-known legitimate agents; and as agreeable a perfume can be readily supplied by any skilful pharmacist.

The various operative procedures in vogue for the removal of obstructing tissues (so-called "anterior and posterior hypertrophies") from the nasal passages are fully described and illustrated. As to the sensations of the unfortunate individual depicted upon page 112, nothing is said, but one could wish, for his sake, that, if the desired result were possibly attainable with less instrumentation, the simpler method should be preferred. To those colleagues "who neither own an electric cautery nor are sufficiently expert to make the snare practically useful," Dr. Robinson does not hesitate to recommend evulsion of the redundant mucous membrane by means of suitable forceps. Had the author persisted more faithfully in the use of laminaria tubes for the reduction of these obstructions by equable local compression, he would have found operative measures necessary even less frequently than he has indicated. But the secret of success in this plan is persistence.

The chapter on "Follicular Diseases of the Naso-pharyngeal Space" is thorough, and in the main judicious. The author properly regards the pathological condition which obtains in "post-nasal catarrh" as the same with that occasioning "follicular pharyngitis," differing only in its localization. He believes in the existence of a "catarrhal diathesis," as the

great predisposing cause, and looks upon "widely disseminated climacteric conditions" as the exciting cause in many instances. Treatment must be both local and systemic. The systemic remedies most useful are sulphur, cubeb, and ammoniac. The local treatment is conducted by means of sprays and powders. In some cases a brush must be used both to detach hardened mucus and to convey medication to the affected tissues. We cannot agree with the author in looking upon this disease as a cause of phthisis; nor does it appear to us to be at all contagious.

The aural complications of nasal disease are briefly and judiciously treated of. "Deflections of the Nasal Septum and Bony Obstructions of the Nose" forms the title of a carefully written chapter, which contains all that is to be said upon these subjects, with the exception of the ingenious "plan to cure crooked noses" devised by Dr. John B. Roberts, of Philadelphia. This chapter would be the better for a word of caution to indiscreet operators, that the latter end of their patients will, in many instances, be worse than the first. More than one nose has been crushed, and punched, and gouged, and drilled for deviation from a classical standard of formation that detracted from its beauty, but was hardly sufficient to warrant operative interference. A bony spur from the superior maxilla is so frequently encountered that we have almost ceased to look upon it as abnormal, and certainly should not deem it sufficient provocation for the use of saw, chisel, or dental engine. Implication that septal deflections and bony obstructions never necessitate operation is not intended, but simply an intimation that operations are sometimes performed unnecessarily. Dr. Robinson does not seem to appreciate the good results sometimes obtainable in cases of deflected septum, from simple pressure, by means of a soft, wooden plug, properly shaped to the parts.

"Ulcerous Coryza" is well studied, and the limitation of the term "ozæna" to the symptom "fetid breath" properly insisted upon, stress being laid upon the peculiarity of the odor of true ozæna as distinguished from the fetidness of the breath due to carious bone, etc. Dr. Robinson agrees with Fournie that "in the case of ozænic patients the glands of the pituitary secrete this special fetid odor," rejecting the theory of Krause which attributes the odor to an excessive formation of fatty detritus. The microbic theory is set aside because no special bacterium has been isolated, the author having apparently concluded his manuscript before Lœwenberg's researches had been published. While the disease may occur independently of syphilitic taint, syphilitic cases are altogether the most frequently met with. Potassium iodide alone, or the mixed treatment may be employed, according to indication. Rouge's operation is not approved by the author, but he prefers Goodwillie's method of extirpating carious or necrosed bone by the use of the dental engine with suitable burrs, if any operation at all be deemed advisable. In the treatment of adenoid vegetations, Meyer's operation and snaring with the cold wire, after the method of Bosworth, are preferred to the use of forceps. Here again the experience of many reliable observers is contrary to that of Dr. Robinson. The various methods for the removal of mucous polypi of the nose are considered and illustrated, evulsion with the cold wire snare being deemed the preferable procedure.

An appendix, which might have been omitted without great detriment to the value of the book, gives an abstract of peculiar views concerning deviated septum and nasal catarrh published after the body of the work

was in type. Dr. Robinson does not comment upon these views, but we doubt their acceptance either by specialists or general practitioners. Summing up, we can safely commend the book as a thorough study and an impartial presentation of its themes, containing, upon the whole, judicious directions for the prevention, alleviation, and cure of the diseases of which it treats. S. S. C.

ART. XXV.—1. *Some Common Injuries to Limbs, their Treatment and After-Treatment, including Bone-setting* (so-called). By EDWARD COTTERELL, M.R.C.S. (Eng.), L.R.C.P. (Lond.), Late House Surgeon University College Hospital; Atkinson Morley Surgical Scholar University College, London, etc. With Illustrations. Small 8vo., pp. 102. London: H. K. Lewis, 1885.

2. *Face and Foot Deformities.* By FREDERICK CHURCHILL, C.M., Surgeon to the Victoria Hospital for Children. With Illustrations of New Appliances for the Cure of Birth-mark, Club-foot, etc. 8vo., pp. 195. Philadelphia: P. Blakiston, Son & Co., 1885.

1. IT is a grave fault to add to the rapidly increasing mass of medical literature without due reason, so that we shall first quote from the author's preface to show the scope of the work, and then endeavor to show our readers how well the proposed plan has been carried out.

"In presenting this small book to the profession, I am actuated by an earnest desire to draw more attention than is generally given to the after-treatment of injuries, and more especially to those injuries occurring in the extremities. The neglect of this after-treatment is the cause of bone-setters flourishing in our midst, and I have endeavored in the following pages to give a short account of some common injuries to limbs with the hope that a more extended knowledge of the after-treatment necessary in order to bring about a successful issue will help to eradicate the popular faith in the so-called bone-setting."

From the foregoing sentences it may be surmised that this book resembles Dr. Wharton Hood's, or the famous lecture of Sir James Paget on "Cases that bone-setters cure," and the supposition is a correct one. Much of what the author says is chiefly, if not entirely, applicable to England, since "bone-setters" are not common in this country. The author's views on so-called passive movements are correct. It is often provocative of trouble, since a stretched adhesion gives rise to inflammation when a torn one does not, but he errs nearly as much upon the other side, so that his teachings tend to mislead the inexperienced into believing that forcible manipulation of a joint is the only and the certain cure for a stiff or painful articulation. Now this is neither correct doctrine nor safe practice. We all must have seen cases where fatal damage has been done by such treatment, even in the hands of skillful surgeons; how much more likely is this to occur among the rank and file of the profession! The truth is that most cases of fracture or dislocation do well with what Mr. Cotterell would call the let-alone-treatment, while some require constant surgical care for a certain time, which care in a few cases demands forcible breaking up of adhesions. Even in some of those apparently fitted for such treatment fatal damage ensues. Our remarks are intended to apply only to traumatisms which have stiffened joints, and so also are the author's.

We think that the author's views as to dislocation of the long head of the biceps are erroneous.

"Lawn-tennis arm" and "Lawn-tennis elbow" are fully considered, and good suggestions made as to their treatment. We are sorry to see the common error of recommending a certain splint as *the* proper one to treat a certain fracture, as, for instance, Carr's for Colles's fracture. We think the principle of construction of this splint a good one, and frequently use it, but we personally *make* it for each case unless an old one seems to suit, and we consult the conformation of the sound radius in each instance. Provided the true nature of the injury be understood, and the displacement properly reduced, any splint, or no splint at all, will bring about a satisfactory result. We do not agree with the author that reduction must be effected by extension and flexion of the wrist; some cases may be thus replaced, many more not, but we have not space to enter into details, since the truth of our statements must be acknowledged even by those of little experience.

We had thought that the fashion of treating recent fractures of the thigh by plaster of Paris had gone so out of fashion by reason of certain manifest disadvantages that new and expensive apparatuses would hardly be invented, but evidently our author disagrees with us, since he pictures a most formidable affair, a modification of Sayre's tripod suspension apparatus.

"Lawn-tennis leg" is to be treated, first by elevation of the limb for about five minutes above the level of the head of the patient, who is of course recumbent; then adhesive strapping is to be firmly applied "from two inches above the ankle-joint to above the thickest part of the calf;" and finally the patient must be at once urged to walk about, the surgeon seeing that "he puts his heel well down upon the ground." We dissent totally from the correctness of the author's views as to the stiffness and consequent lameness after Pott's fracture, and we cannot pass by without rather severe comment the statement that it is not uncommon, when the foot is not kept at a right angle with the leg, to have "a subluxation of the foot backwards," which should be treated by division of the tendo Achillis.

To an American reader the statement that the plaster-of-Paris bandage is to be made by rubbing plaster into muslin bandages is misleading, since it is always prepared from cheese cloth, tarlatan, or some similarly open-meshed material. What the term "muslin bandage" may include in England we cannot say, but no fabric of that name here will hold enough plaster to make a useful dressing. The book closes with a remarkable cure (?) of a bad case of rheumatoid arthritis by forcible manipulation of the affected joints!

With every desire to do the author justice, and recognizing that most of what he says, although exceedingly "sketchy," is correct, we yet cannot acquit him of the charge of writing an unnecessary book, while Wharton Hood's treatise or Sir James Paget's lecture is so readily obtainable, not to mention most good text-books.

2. The author of *Face and Foot Deformities*, in his preface, declares that he has used the term deformity "in its broadly generic sense, as applicable to all surface lesions and symmetrical defects." We can bear testimony that he has not restricted himself in his choice of topics, as he treats of nearly every conceivable subject, from "black eye" to corns.

We somewhat question the propriety of considering arcus senilis and the facial distortion of hemiplegia to be "deformities" of the face, but then we have never before considered deformities in a "broadly generic sense."

Mr. Churchill understands a deformity to be "any recognized alteration in structure, whether temporary or permanent;" . . . "a deformity, in fact, is anything that is manifestly ugly or crooked." Truly a most catholic definition!

The author likewise asserts that he has confined himself to surface deformities, and again practically demonstrates how little meaning can be nowadays attached to any name by carefully describing and figuring a case of total excision of the os calcis, and discussing the advisability of removing the astragalus in unreduced luxations of that bone, amputation or excision for compound luxations of the ankle, etc. etc. Surely the deformities produced by such conditions may *appear* upon the surface, but cannot be called surface deformities.

The book is a small one, and has the text reduced by a considerable number of cuts, yet the author attempts to consider over one hundred and fifty different conditions! Reading this book is like studying a rather full table of contents for an encyclopædia. Not that the book is without good points. Far from it; but improper omissions have been mistaken by the author for terseness, so that the condensation has been carried to the point where perspicuity ceases.

To attempt a detailed review of such a work is impossible. The pathology is altogether new to us. Thus nævi are said to appear "when the ultimate radicles have become fused, so that there is a permanent collision of blood-currents, causing venous and vascular dilatation, distension, and sacculation, with hypertrophy of vessels in the surrounding connective tissue."

"Port wine stains" the author treats by punctiform cauterization through a perforated metallic plate by means of a finely pointed Paquelin cautery. The author thinks that in "warts" "the epithelial covering of the papillæ takes on excessive growth, resulting in hypertrophy and elongation of this group of papillæ." We were always under the impression that the epithelial cells certainly had nothing to do with the initiation of the process, and we still think so.

The following definition of erythema nodosum rather astonished us, viz., "brawny circumscribed patches of redness about the size of a florin surround a central vesicle or ulcer, having an irregular punched-out appearance." We certainly did not before know that any form of erythema was a vesicular or pustular disease! The description of facial erysipelas is almost equally incorrect. We think the author's advice to remove the fragments of a broken upper jaw bad, as only tending to increase deformity. In passing we would ask, If a comminuted fracture of the upper jaw is a surface deformity, what is a deep one? We are told to plug the nostrils in a fractured nose to arrest hemorrhage. This is almost never necessary.

The directions as to plastic surgery amount to little more than a catalogue of various deformities and the general advice to remedy them by a plastic operation, but how or when does not appear. As to the directions for operating upon a hare-lip we can only express the hope that the results attained by the author are better than the descriptions of the operations, in which, also, he differs on some radical points from most surgeons. The suggestion to attack nævoid growths in the substance of

the lips from the buccal mucous membrane by some form of cautery, carefully avoiding the skin, is a good suggestion. We should like to know what the "roots of the disease" means when applied to nævi.

We learn for the first time that "coloboma may result from the imperfect closing of a wound in the upper lid." We have heard of a coloboma which is congenital, but never of an acquired one of the upper lid. We are likewise surprised at the alleged cause of conical cornea, which is certainly opposed to all authority.

Among the foot deformities is an account of an interesting case of complete separation of the tarsus from the metatarsus which was successfully treated by the plaster bandage. Some excellent advice is given concerning proper foot-wear, both for prophylaxis and cure of the acquired deformities of the feet. There is nothing new or demanding special comment in the author's account of club-foot, but in its treatment he claims that it is useless to attempt eversion of the foot in many cases of varus, when the tendo Achillis is contracted; he thinks this tendon should first be cut. In "what is called T. equino-varus, the tendo Achillis" . . . "is that which is most at fault" and must be divided. Mr. Churchill discards all apparatus, uses forcible manipulation, and puts up the foot in a rather ingenious but unnecessarily elaborate modification of the ordinary plaster bandage.

In conclusion we would say that we have pointed out the most serious of the sins of commission of the author, but we cannot conceive of any necessity for the publication of a book which, from the number of subjects treated of in such a small compass, can be little more than a catalogue of diseases. There is no doubt that the author has had a wide and varied experience at the Victoria Hospital for children, and it is a matter for regret that he did not expend his energies upon some half dozen of the one hundred and eighty odd topics of which he writes. Then we should probably have had some real addition to our surgical knowledge, while by the perusal of the present we can hardly be said to have been much instructed.

C. B. N.

ART. XXVI.—*Recent Treatises on Gout.*

1. *The Regimen to be Adopted in Cases of Gout.* By Dr. WILHELM EBSTEIN, Professor of Clinical Medicine in Göttingen. Translated by JOHN SCOTT, M.A., M.B., Honorary Physician Manchester Southern Hospital for Diseases of Women and Children. 8vo., pp. 68. London: J. & A. Churchill, 1885.
2. *Gout in its Clinical Aspects, an Outline of the Disease and its Treatment, for Practitioners.* By J. MORTIMER GRANVILLE, M.D., Member of the Royal College of Physicians in London, Mem. Corr. Étranger Société de Paris. 12mo., pp. 307. London: J. & A. Churchill, 1885.
3. *Gout and its Relations to Diseases of the Liver and Kidneys.* By ROBSON ROOSE, M.D., Fellow of the Royal College of Physicians in Edinburgh. 12mo., pp. 158. London: H. K. Lewis, 1885.

IT must be reluctantly admitted that we can claim little progress towards the ideally successful treatment of gout since the days of the renowned

Sydenham, who, as a result perhaps of being himself a martyr to the torture of this agonizing malady, devised remedial measures which still hold their place in the therapeutics of this disease. But venerable, aristocratic, and therefore conservative, as Podagra is usually deemed, its dignity has not exempted it from the general tendency of practical medicine at the present time towards *prevention*, as far preferable to, and frequently far more feasible than, *cure* of physical derangement, and a cursory examination of the volumes before us shows that in each the question of prophylaxis is considered with especial care. In fact, the work of Dr. Ebstein, the celebrated professor of clinical medicine in Göttingen, has been written almost exclusively from a prophylactic point of view, an aspect which certainly affords the best avenue for a triumphant attack upon this atrocious enemy of mankind.

Prof. Ebstein is a firm believer in the doctrine that effeminacy and luxury are powerful predisposing agents in the production of gout, and quotes Seneca to prove that the surprising increase of this disease in Rome, during the first century of the Christian era, was a consequence of increased luxury in living. The Roman philosopher adduced as sufficient proof of this, the frequent occurrence of gout in the female sex, remarking that "women, in fact, who in his time were not behind men in licentiousness of life, were attacked by gout themselves, whereas in the time of Hippocrates, when they lived a simple and modest life, they were spared its onsets." Our author also fully accepts the current opinions as regards the hereditary nature of gout, declaring that this is at least as important a factor in its production as excess in eating and drinking, combined with inactivity of life, for excesses we may avoid, but hereditary influences we cannot escape. In this respect he recommends close attention to the principle, so humorously inculcated by the adage, "we cannot be too particular in the choice of our ancestors."

Acknowledging that Garrod, in 1859, was the first to demonstrate conclusively that the *materia peccans* of gout is uric acid, Dr. Ebstein claims to have proved that this acid is a chemical poison, which can cause not merely inflammatory, but also necrotizing and necrotic processes in animal tissues; and by a further series of experiments in which the symptoms of gout were produced in birds by tying the ureters, and also destroying the renal epithelium by the hypodermatic injection of chromic acid salts, he has also shown, to his own satisfaction at least, that the gouty changes in the body are the necessary consequences of uric acid. Our author repudiates the theory of Dr. Garrod, which attributes the phenomena of gout to retention of uric acid as a result of renal disease, and contends that the gouty process, in by far the majority of cases, may be developed and continue for a long time without the parenchyma of the kidneys being materially injured, or in any way hindered in the exercise of its regular healthy functions. In regard to the localization of gouty inflammations, he asserts that everything which promotes the circulation of the fluids in the body hinders the development of gout, while everything that restrains, disturbs, retards, or arrests the circulation gives an impetus to the gouty process. In support of this important generalization, which is capable of so many practical applications, he mentions the interesting observation of Charcot, who records that, in making a post-mortem on the body of a woman forty years old who had suffered from hemiplegia, he found the majority of the joints on the paralyzed side of the body infiltrated with uric acid salts.

With these facts and principles as a basis, Dr. Ebstein urges that, in the effort to lay down rules for the mode of life most suitable to gouty patients, more attention should be paid to the gouty predisposition than is generally the case. That is to say, persons who suffer from gout should at an early period attend to the dietary and training of their children, and medical men can by intelligent prophylaxis be of much service in the instruction of people who are amenable to advice, for, without predisposition we may say, as a rule, there is no gout. Whether and how far, says our author, this power of hereditary transmission may be weakened, cannot be settled with absolute certainty, but, as Corradi in particular has tried to show from a series of cases, the study of the history of culture among nations leads us to the conclusion that through a series of generations long-continued moderation exercises a favorable influence on the frequency and course of gout in the later generations. "In this respect to coöperate in the weakening of gout is the task and duty of every gouty person and every one disposed to gout who have children."

In approaching the problem of regimen in gout, Dr. Ebstein maintains that, since we have to do, not with deficient elimination, but with increased production of uric acid in anomalous positions, particularly the muscles and medulla of bones, the first step is to seek methods of checking uric acid formation in general. Whilst admitting that the use of animal food increases the production of uric acid, our author asserts that the intestinal canal in gouty patients is very susceptible to functional disturbances, so that, if we select a purely vegetable diet, the actual quantity of nourishment thus taken will be so great as to overpower the efforts of the bowel to manage it. Hence, he advocates a mixed dietary, allowing, as directed by Cantani, flesh meat, soup, eggs, and fish, in moderate, and vegetables in greater quantity. But, although he accords with the Italian physician in reducing or prohibiting the carbo-hydrates in general, he makes an exception in regard to fats, provided they are of the best quality. Equally important with attention to the kind of food is limitation in regard to quantity. "The gouty individual stands in the first rank of those who must *eat merely to live*. If ever he has found any pleasure in *living to eat*, he must wean himself from it as soon as possible. Sweets apart, our gouty friend may be as ticklish (dainty?) as he likes, but he must never be a glutton. He must cease to eat as soon as the first feeling of satisfaction comes on, nor must he give way to the false appetite which develops after this, and which if gratified brings him to the *non-possumus* stage." As regards relishes, such as condiments in general, vinegar and so forth, only that quantity should be taken which is absolutely necessary to render the food palatable; but fruits may be freely recommended to those who are gouty, or have a tendency to gout. Linnæus is reported to have cured himself of a long-standing gout by the use of strawberries in abundance. Water is advised as the best beverage, alcohol in all its forms being injurious, although in some cases the prescription of alcohol may become a necessity. Of wines, champagne is the most objectionable, and certain kinds of beer or pure brandy freely diluted are the least detrimental in their effect.

Dr. Ebstein awards a high place in his system for the prevention and cure of gout to physical exercise, which in all its varieties should be assiduously practised, with the single proviso that it must never be pushed to the point of exhaustion. Passive manipulation, dry rubbing with

flannel, and massage are admitted to be useful, but should if possible never be allowed to take the place of bodily activity.

Finally is considered, both in the body of the work and in an appendix of additions and illustrations, the influence of Continental baths and mineral waters, for information in regard to which, as well as respecting many minor yet important details concerning diet, clothing, and so forth, we would warmly recommend our readers to this valuable treatise itself.

2. Dr. Granville in his preface modestly (almost too humbly) disclaims any pretension to writing a scholarly monograph, and apologizes for his "audacity" in daring to differ from some of the opinions expressed by Prof. Garrod in his work upon the subject, which is pronounced the best book on gout in our own, or probably in any other language. Dr. Granville considers the malady from a clinical standpoint alone, saying nothing of the bibliography, and very little of the pathology, of the disease. The first part of the book is devoted to *Facts and Indications*, whilst the second includes *Treatment and Formulæ*.

Our author appropriates a chapter to the "gouty constitution," although he declares that the observant clinician will infer its existence from the discovery of evidence of the gouty habit, rather than hypothecate the gout from a fancied recognition of the type of constitution or organic habit upon which it is supposed to depend. His conclusions in regard to certain notable peculiarities of the way in which gout is inherited have much practical value, and should be carefully considered by any physician called upon to solve the problems of diagnosis and treatment in families where the arthritic diathesis has manifested itself, or is suspected to exist.

In the treatment of an acute attack of gout, Dr. Granville recommends: First, the free use of chloride of ammonium, with chlorate of potash in dilute solution, as an efficient diuretic, which operates without increasing, but on the contrary relieving, any irritation or congestion of the kidney which has occurred. Second, the employment of iodine in the form of the tincture, with glycerine and water in large quantity. This mixture, disagreeable as it is, affords so much relief from pain after each dose that the patient will generally be anxious to repeat it, and opium or any other anodyne may usually be dispensed with. After the more urgent symptoms are relieved, a grain of quinine should be added to each dose of the iodine mixture. On the other hand, if this mode of treatment should fail from any cause, Dr. Granville advises us to fall back upon colchicum, administering the wine of the root in half drachm doses, with a saline or alkaline carbonate. Judicious instructions are given in regard to modifications of this treatment under various circumstances, and much valuable information is conveyed respecting the diet, nursing, and general management of these trying cases, which so often tax to the uttermost a medical practitioner's best skill and care.

In considering the proper regimen of a gouty patient during the interval between the two attacks, Dr. Granville contends that the attempt to prevent the accumulation of uric acid in the system by reducing the amount of raw material from which it is supposed to be manufactured is a dangerous error, and advocates for his patients as rich and varied a diet as the appetite demands or the palate desires, provided a due functional activity of the liver and abundant exercise in the open air are secured. In this view our author is diametrically opposed to Prof. Ebstein, as quoted in a previous portion of this article; and although an approval

of such gastronomic liberality may be expected from the gouty patient, who is generally a *bon vivant* to the backbone, we have little doubt that in many instances at least the system so ably advocated by the German physician will win a far greater measure of success.

The latter portion of Dr. Granville's primary section is devoted to a detailed exposition of the treatment in chronic, rheumatic, retrocedent, and irregular gout, and of gouty affections of various organs, whilst the second part comprises a large number of excellent formulæ, many of which are indorsed by the author after prolonged experience in their efficacy.

3. As a record of personal observation in regard to the gouty dyscrasia Dr. Roose's book represents, he tells us, a somewhat extensive clinical experience, which appears to have led the author to conclude that functional disorder of the liver underlies the majority of gouty manifestations, and that the kidneys are only secondarily implicated. Hence, the main object of treatment in his opinion is not merely to neutralize the uric acid (which, as we have already pointed out, seems to act as a chemical poison) by means of alkalies, but also, and in an especial manner, to secure the due restoration of the hepatic functions. After a very fair account of the various theories in regard to the cause of gout, Dr. Roose enunciates his own views in a series of propositions as follows :—

"1. Uric acid in the form of sodium urate is the *materies morbi* of gout.

"2. The deposit of sodium urate in the joints is the cause of gouty inflammation.

"3. This substance is produced in excess as a result of the imperfect transformation of albuminous substances.

"4. This imperfect transformation is, for the most part, due to functional disorder of the liver, or to excessive supply of nutritive materials, or, as often happens, to a combination of these causes.

"5. So long as the excess of uric acid is eliminated by the kidneys, decided attacks of gout may be absent, but the symptoms above described as pertaining to the uric acid diathesis are liable to be present.

"6. The kidneys are apt to become secondarily affected, owing to the irritation set up by excess of uric acid, and other products of defective metamorphosis, and by deposits of urates. Primary disorder of the kidney is not a necessary factor in the production of gout.

"7. In the majority of cases of chronic gout increased production of uric acid, is associated with defective elimination by the kidneys.

"8. The symptoms of nervous disorder in gout are due to the action of the *materia peccans* on the nerve-centres."

Under the head of errors of diet as a cause of gout our author declares that, in opposition to the views of Dr. Garrod, sugar, unless in the most moderate quantities, is almost poisonous to a gouty subject. This injurious effect of the saccharine elements has been explained on the theory that sugar causes uric acid to assume a less soluble form in the human system. The amylaceous and oleaginous ingredients of food are objected to by Dr. Roose on similar grounds, no such exception in favor of fatty articles of diet being admitted, as that approved by Prof. Ebstein in his work noticed above. The action of alcohol is summed up by saying that distilled spirits and the lighter wines appear to be innocuous, as far as the production of gout is concerned, while malt liquors of all kinds and the stronger and imperfectly fermented wines (comprising port, sherry, Madeira, and champagne) play a very conspicuous part in the causation of gout.

On a subsequent page (125) Dr. Roose asserts, however, what is probably much nearer the truth, that "both theory and experience teach us that alcohol in any form should be avoided by gouty subjects." The influence of lead as a predisposing cause of gout is mentioned as a question of considerable interest, and the suggestive fact stated that even in medicinal doses salts of lead are wont to cause very marked symptoms in gouty patients.

In the treatment of an acute attack of gout Dr. Roose is of course influenced by his views as to the preponderating causal influence of hepatic disorder, and usually commences with a mercurial purgative, followed by colchicum in the customary mode. No mention is made of the administration of iodine, so highly lauded by Dr. Granville, but great benefit is claimed from the employment of extract of belladonna, dissolved in diluted glycerine and applied locally upon cotton-wool to the affected joints.

J. G. R.

ART. XXVII.—*Diseases of the Spinal Cord.* By BYRON BRAMWELL, M.D., F.R.C.P. (Edin.), Lecturer on the Principles and Practice of Medicine in the Extra Academical School of Medicine, Edinburgh. Second edition. Edinburgh: Young J. Pentland, 1884.

WE are not surprised that a new edition of this valuable work has been called for so soon. The orderly and systematic arrangement and the numerous and beautiful illustrations make it a book particularly welcome to the practitioner and student. That French, German, and Russian editions have already appeared indicates the estimation in which it is held in Europe, and is a compliment not often paid to English authors. The edition shows careful revision. A great improvement has been made in placing the pathology of individual lesions under the special diseases, and a large number of new wood-cuts and colored lithographs have been added. But the most important change is the insertion of sections on functional diseases and on concussion of the cord. The paraplegias depending upon hysteria, malaria, alcohol, reflex paraplegia, neurasthenia spinalis, spinal irritation, and Reynolds's "Paraplegia depending upon Idea," are fully considered, and valuable suggestions given upon diagnosis and treatment. The section on concussion of the spine deals particularly with the symptoms resulting from railway collisions, and contains a most careful analysis of the condition known as railway spine as well as the method to be employed in the examination of these cases. To railway surgeons this chapter will prove especially interesting, and the systematic manner in which the subject is treated should be of great assistance in the study of these troublesome yet important cases.

As a text-book for the student, and as a guide to the practitioner in unravelling obscure spinal cases, Dr. Bramwell's work has no equal.

W. O.

ART. XXVIII.—*A Manual for the Practice of Surgery.* By THOMAS BRYANT, F.R.C.S. Fourth edition, with 727 illustrations. Pp. 1039. Henry C. Lea's Son & Co., 1885.

AMERICAN surgeons and students have signified their appreciation of this work by a demand for four editions since 1879. The third American, reprinted from the third English edition, was thoroughly revised by Dr. John B. Roberts. It was "noticed" in the July number of the JOURNAL for 1881. The volume now before us is the unaltered reprint of the fourth English edition, in which the author has advisedly incorporated many of the additions of Dr. Roberts.

Now, as at any time in the last score of years, the treatment of wounds holds a pre-eminent place among important surgical questions, and particularly is this true of the antiseptic method. Of the Listerian mode of dressing wounds, the author observes that "it has had its day, although the principle upon which it is based survives and is likely to do so." Like many opponents of the antiseptic method, Mr. Bryant is unnecessarily severe. The school of antiseptic surgeons "maintain that exploratory and operative measures which have been regarded as beyond the province of the surgeon may now be calmly and quietly undertaken with a *moral certainty* of being followed by a good result. Thus it is that they talk of cutting into healthy joints with the *certainty* that no danger will follow, and declare that great operations upon the bones of the knee may be undertaken with the feeling that in so doing we do not subject the patient 'to any risk whatever;' that a wedge-shaped piece of bone may be taken from a deformed femur with the confidence that a compound fracture so produced is perfectly safe and without risk, and, last but not least, that the peritoneal cavity under antiseptic precautions may be opened with *impunity*." "I need hardly say," continued Mr. Bryant, "that much of this is bold assertion. . . . Facts, indeed, have been employed by our self-styled antiseptic friends as legal advocates use small data which tell in their favor to support the cause they have in hand, but not as the judge who has to weigh evidence, and with an unbiased mind give judgment." Like all the opponents of the method under consideration, our author must resort to it in a modified form, and cannot refrain from recognizing its great value. "We must admit," he remarks, "that surgery is now much more successful than twenty years ago, and that of the many factors which have brought about this result, the employment of antiseptics stands foremost." . . . Indeed, the importance of the principles of antiseptic surgery can no longer be disputed, and the only differences of opinion possible concern the choice of antiseptic and its mode of application. Mr. Bryant is partial to the irrigation method, for which he uses the tinct. iodinii (1–80). After operations this is applied hot.

A chapter to which surgeons invariably turn is that devoted to injuries of the skull and its contents. In the volume before us, these injuries are treated of at considerable length, and the precepts laid down for the guidance of the practitioner are, for the most part, in accord with those generally accepted by surgical writers. Thus, trephining is advocated in all punctured fractures. In other cases of fracture, whether compound or simple, surgical interference ought not to be adopted as a rule of practice, "since experience has taught us that depressed bone *per se* may exist

to a great extent without giving rise to any serious brain complications, and that when even brain symptoms follow as an immediate result of the injury they may all pass away." In compound fractures, however, associated with depression and comminution of bone, both with or without brain symptoms, the author advises the removal of loose pieces and the elevation of depressed portions. In this chapter Mr. Bryant has not incorporated the results which have accrued from the labors of Ferrier, Charcot and Pitrès, Fritsch and Hitzig, and others who have labored in the field of cerebral localization. The cerebral cortical centres that are now almost universally accepted as controlling centres for certain sets of muscles, and the well-known rules for locating them in the living for operative purposes, have been entirely ignored in the volume before us. In a general way, Mr. Bryant justifies the opening of the dura mater when no pus has been found between it and the bone, but believes that "the evidence required to sanction any incision into the brain itself in search of suppuration must be very strong."

The chapter on Lumbar Colotomy, in the edition before us, has been enriched by an analysis of 82 cases operated upon by Mr. Bryant, which were presented in a paper read before the International Medical Congress at Copenhagen. Of the 82 colotomies, 60 were performed for cancerous growths, 19 for "non-cancerous" stricture and ulceration of the rectum, 1 for volvulus of the sigmoid flexure of the colon, and 2 for obstruction due to pelvic tumors. Left lumbar colotomy was performed in 77, and right lumbar colotomy in 5 of these cases, all the latter being cancerous. 26 or 43.3 per cent. of the cancerous, and 6 or 31.5 per cent. of the non-cancerous cases with 1 operated upon for obstruction, or 40 per cent. of the whole number, died within the month. 34 or 56 per cent. of the cancerous, and 13 or 68.5 per cent. of the non-cancerous, with the case of volvulus and 1 of the cases of obstruction, or 60 per cent. of the whole number of cases operated upon, received more or less fully the benefit of the operation, surviving it from six months to fourteen years.

However inviting these results of the author may be, it must always be remembered that colotomy is an operation palliative in its nature and necessarily followed by a condition to which many patients would prefer death. It is therefore especially fortunate that excision of the rectum has recently received the attention of surgeons as an operation not only justifiable, but, all things considered, eminently successful. Whenever practicable, it should be given the preference over colotomy. "It would seem," says our author, "that about two and a half or three inches of the rectum may be removed with safety." Billroth, Czerny, Esmarch, and many other continental surgeons have demonstrated conclusively, however, that four and even five or more inches of the bowel can be removed with fair prospects of a successful result, and that the opening of the peritoneum as it is reflected on to the gut cannot be deemed an obstacle in the way of a favorable issue. Whereas, lumbar colotomy merits all the attention our author has given it; the operation of excision of the rectum as an infinitely more radical measure has not obtained a proportionate consideration at his hands. Of the two procedures, there can be little question that excision of the rectum should always be preferred save in the most hopeless cases.

As might well be expected from the pen of an English surgeon of the distinction of our author, the chapters on the surgery of the abdomen are among the most interesting and instructive of the volume. Especially is

this true of those on hernia and the various forms of intestinal obstruction. On the other hand, but little notice is taken of the recent advances in the surgery of the abdominal viscera. Strange as it may appear, we could find no mention of hepatic abscesses and their treatment. Furthermore, although nearly forty cases of cholecystotomy have been recently performed, and the justifiability of the operation has been firmly established, the term is not to be found in the text or index. In strong contrast, therefore, with this want of consideration of important subjects is the chapter devoted to renal surgery, which, although concise, is fully abreast of the opinions of the most eminent writers of the day.

In the chapters on Fractures, Diseases of Bloodvessels, Surgical Pathology, and Special Surgery, very numerous additions, to which it is impossible to more than direct attention, indicate the work which has been done in revising the last edition. While this volume has essentially the scope and character of a text-book, it everywhere displays the strong personality of the author. Allusions to cases encountered by him are everywhere interwoven in the text, and it is this probably, more than aught else, which has given this work the enviable position it holds among surgical treatises. It certainly needs but little commendation from us. Having passed through four editions in England, it may be safely viewed as an enduring recognition of the rank of its author among the eminent guides of students and practitioners. J. R.

ART. XXIX.—*Health Reports.*

1. *Third Annual Report of the Provincial Board of Health of Ontario for the Year* 1884. Pamphlet, pp. 224. Toronto, 1885.
2. *Fifth Annual Report of the State Board of Health, Lunacy, and Charity of Massachusetts. Supplement containing the Report and Papers on Public Health.* Pamphlet, pp. 283. Boston, 1884.
3. *Seventh Annual Report of the State Board of Health of Rhode Island for* 1884, *including the Report upon Births, Marriages, and Deaths in* 1883. Pamphlet, pp. 409. Providence, 1885.
4. *Second Report of the State Board of Health of Tennessee. Oct.* 1880–*Dec.* 1884. 8vo., pp. 600. Nashville, 1885.

1. IN presenting its Third Annual Report, the Health Board of the Province of *Ontario* states that the work of the year has been exceedingly gratifying, and affords evidence that the broadcast dissemination of sanitary knowledge by pamphlets, health conventions, and various other means, has resulted in a more intelligent appreciation of the nature of epidemic disease, and an increased comprehension of the best means for its prevention or limitation. Satisfactory as the progress made has been, however, the recent serious and prolonged epidemic of smallpox in the adjoining province of Quebec shows that much room for improvement in this respect, among our neighbors across the St. Lawrence River, still exists. A certain amount of popular anxiety in regard to the advent of cholera, coupled with a lively recollection of the fact that the comma bacillus of Asiatic cholera first entered the continent of North America as an imported commodity, arriving at Quebec early in 1832, has probably

aided in the good work of establishing Local Boards of Health, four hundred of which have been created in Ontario since July 1st of last year. A well-founded complaint is made of the great want of proper precautions at English ports of embarkation against the carriage of disease germs by emigrants coming from infected regions on the continent of Europe, to take passage upon British ships for this country. Indeed there is great reason for us in the United States to unite with the authors of this Report in the warning that "unless greater precautions are taken at ports of departure of emigrant ships from Europe to this continent, the germs of disease not yet extinct may be imported to our shores, and, as a necessary consequence, a larger amount of additional work by the Board will be called for." The volume does not contain any essays or articles upon sanitary subjects, being made up chiefly of reports from the numerous Local Boards of Health, which, valuable as they are to the officials concerned, possess only a subordinate interest for the general reader.

2. From the *Massachusetts* Report it appears that only a few isolated cases of smallpox have occurred in the State during 1883, and the prophylactics of vaccination and prompt isolation have been so successfully applied that only five deaths from variola are recorded. Scarlatina has prevailed with considerable uniformity throughout the year, but the total mortality is much less than the average for the past twenty years. The deaths from diphtheria have been fewer than in 1883, and fewer than in any year since 1874. The improvement in regard to these contagious maladies is no doubt largely due to the gratifying fact that greater care is exercised against their spread in schools throughout the State, certificates of health being now usually required previous to the readmission of children who have been ill with contagious disease. The Act of Legislature passed in March, 1884, under which this important advance in school hygiene is enforced, also very judiciously prohibits the attendance of a pupil at the public schools while any member of the household to which such pupil belongs is sick "of smallpox, diphtheria, or scarlet fever, or during a period of two weeks after the death, recovery, or removal of such sick person."

The first paper is an essay on *Tubular Wells and Wells in General as a Source of Water-Supply for Domestic Purposes*, by J. C. HOADLY, and gives much needed information in regard to the dangers of drinking-water pollution. This article is illustrated by numerous diagrams, indicating the effect of pumping water from wells upon the circumjacent ground-water, and tending to impress upon the reader's mind very strongly the importance of discharging at much greater distance than is usually allowed from every well used for domestic purposes all causes of contamination.

The Sanitary Condition of Somerville, by JOHN F. COUCH, M.D., gives a very thorough and complete report of its subject-matter, and exhibits evidence of much faithful and diligent sanitary work, the efficiency of which is proved by the almost regular decrease of the death-rate from 24.3 per thousand in 1872, to 17.1 per thousand ten years later.

The report in regard to the *Inspection of Food and Drugs* is made up of the results obtained by Dr. E. S. WOOD, Analyst of Food, Dr. B. F. DAVENPORT, Analyst of Drugs, together with those of Dr. CHARLES WARRINGTON, of Boston, and Prof. C. A. GOESSMANN, of Amherst, Analysts of milk and its products. Prof. Wood reports that he has received and examined about six hundred samples of various articles of food, nearly half of which proved to be more or less adulterated. During the year a grad-

ual improvement of the specimens submitted has been noticed, and among other signs indicating a wholesome dread of the law is the fact that many brands of ground spices, formerly sold as "strictly pure," are now marked "compound." Many of the common articles of diet, notably the cereals, are happily quite free from fraudulent sophistication. Whilst a large amount of fraud is thus shown to exist, it is gratifying to observe that poisonous compounds, offered as imitations or substitutions, were rarely discovered. The investigation in regard to milk shows that adulteration is much less common in the western part of the State than in the larger cities and towns of the eastern portion. In Boston and neighboring towns only about twenty per cent. of the samples came up to the high official standard of thirteen parts per hundred of total solids, and in some instances the amount of dilution was shamefully great. Dr. Davenport, drug analyst, states that he has examined six hundred and eighty samples of "U. S. Pharmacopœial drugs," and found over forty-one per cent. were adulterated. These specimens were carefully collected from all parts of the State in such a manner as to avoid errors as far as possible, and many of the results obtained are of sufficient interest and importance to be condensed for the benefit of our readers, did space permit.

A short report on *Trichinosis* based on four supposed cases of the disease, none of which proved fatal, is followed by an essay on the *Sanitary Condition of Nantucket.*

The concluding paper by Prof. E. S. Wood, upon *Arsenic as a Domestic Poison*, is one of great value, and is illustrated in the most practical way imaginable by an object lesson of six pages, displaying thirty-three strips of paper, one of calico, and one of Turkey-red cotton fabric, all containing arsenic in varying quantities up to 55.88 grains per square yard. None of the more atrociously poisonous wall-papers are exhibited in this highly instructive series of samples, partly because the binding of them in a previous report by Dr. Draper gave rise to extremely disagreeable results among the bookbinders who handled them. Dr. Wood gives numerous illustrative cases of arsenical poisoning from such wall decorations, pointing out also the danger of using these colors for kindergarten papers, in the manufacture of theatre or other tickets, in glove or hat linings, stockings, and other articles of clothing, and in some rare instances in confectionery. The method of determining the presence of arsenic resorted to by our author was the usual Marsh's test, a piece of the suspected paper about four inches square being cut up into small fragments, heated with pure concentrated sulphuric acid to destroy all the organic matter, exhausted with distilled water, and the filtered solution, which will contain nearly all the poisonous ingredient, introduced directly into a Marsh's apparatus. As a means of awakening attention to the peril from wall-papers, which present, as they often do, none of the bright green tints which are popularly supposed to be the chief danger signals, we welcome this essay of Prof. Wood as an important contribution to the literature of the subject, and would hail with pleasure its dissemination throughout the whole community in some more popular form than in a bulky official report.

3. The *Rhode Island* report shows an improvement in work of the registration department, not only by being more complete in regard to the details of births, marriages, and deaths, but also in respect to that great refuge of ignorance and incompetence in diagnosis, the group of cases in which the cause of death is recorded as unknown. No severe epidemic of disease has occurred in Rhode Island during the past year, and the

comparatively small number of cases of contagious or infectious maladies has usually presented a mild form. Increasing attention appears to have been bestowed upon the important subject of contagious diseases among domestic animals which may be transmitted to man, and entail a vast amount of injury to human health. In tabulating the mortality reports the nosological arrangement is founded upon the British nomenclature of diseases, so that some further progress is here made towards that complete uniformity of classification which, it is ardently hoped, will obtain throughout English-speaking countries as soon as the long looked-for report from the committee of the English Royal College of Physicians is promulgated. In common with many other health authorities, the Rhode Island Health Board issued a circular, reprinted in this report, containing concise, clear, and correct *Suggestions in Relution to Prevention and Restriction of Asiatic Cholera*, in which the great duties of strict quarantine to exclude the germs of cholera, and the prompt abatement of cholera-breeding places, where propagation of the disease poison is favored by decomposing organic matter and impure air, are strenuously urged upon municipal authorities as well as upon every good citizen.

From the able and voluminous report of SAMUEL M. GRAY, C. E., of Providence, in regard to *Sewerage System and Sewage Disposal*, it appears that, after extended personal investigation of the methods now in vogue abroad, the author recommends that an improved system of intercepting sewers shall be constructed in Providence, by which the sewage will be conveyed to a suitable point, and there treated with chemicals in such a manner as to precipitate the suspended materials, and clarify the effluent, so that when discharged into deep water it will be practically innocuous. His reasons for advising this process are that he is confident the foul fluids can be rendered harmless before they are emptied back into the river, and that the purification can be accomplished at less expense than by the method of irrigation, because from careful and extended surveys he is convinced that the large amount of land required for suitable sewage farms cannot be purchased at a reasonable cost, within moderate distance of the city. The experiment of providing for an estimated daily flow of sewage, amounting to three millions of gallons, by engineering works proposed to cost over three and a half millions of dollars, will be observed with great interest by sanitarians, particularly as the various precipitation processes, although now in apparently successful operation in certain English towns, have failed to win the general approval of those most skilled in sanitary engineering.

The concluding paper is a reprint of the preliminary report on *Disinfection and Disinfectants* lately made by the committee of the American Public Health Association, which is justly indorsed as the best guide we possess at present in the practical work of destroying the *materies morbi* of various contagious or infectious diseases.

4. The scanty appropriation made to the *Tennessee* Board of Health has apparently prevented the publication of any annual report since the year 1880, so that the present volume comprises the record of proceedings for over four years. This account affords convincing evidence of the excellent sanitary work accomplished by the members, both individually and collectively in their official capacity, and constitutes a mass of eloquent testimony in favor of liberally sustaining the Board of Health. This, we trust, the intelligent community, for whose benefit these arduous labors in the cause of public hygiene have been so nobly carried on, will

appreciate in that substantial manner which can alone crown such beneficent efforts with complete success.

The first paper is a well-written article on *School Hygiene in Tennessee*, by DANIEL F. WRIGHT, M.D., of Clarksville, member of the State Board of Health and chairman of its committee on the subject. The author evinces an admirable appreciation of the vital importance possessed by a systematic attention to the health of school children, which class comprises to-day nearly four-fifths of the rising generation, the hope of America, and his recommendations are well worthy of careful consideration by every teacher and parent in the State. In his report on the *Prisons in Tennessee*, Dr. P. D. SIMS, of Chattanooga, makes a strong plea against the system, now in vogue, of farming out convict labor, which, as at present enforced, entails upon the prisoners the startling death-rate of one hundred and forty-seven per thousand annually. Dr. G. B. THORNTON, M.D., of Memphis, presents an able report on *Epidemic and Contagious Diseases*, as they prevailed in Tennessee during 1881–1882, which, however, is not as complete as is desirable, in consequence of deficiencies in the statistics furnished, with the exception of those forwarded by Dr. Kemp of the English settlement of Rugby. This record is in regard to an outbreak of typhoid fever which prevailed at Rugby, and affected the inhabitants of the place in thirty-five instances, twenty-seven of which were traced beyond a doubt to the contaminated well water of a tubular well belonging to the chief hotel. A timely paper on *Bovine Tuberculosis*, by Dr. J. D. PLUNKET, of Nashville, judiciously urges upon the community a speedy adoption of measures for avoiding infection from "this fruitful source of human disease and death." Dr. Plunket also furnishes an article on *Ozone and its Relations to the Public Health*, which is illustrated by a lithographed ozone scale, and is well calculated to promote that systematic observation of the effects of this powerful but mysterious agent, as developed over wide areas of country, and under different conditions of atmospheric pressure, humidity, and so forth, which is much desired by meteorologists. A valuable essay on *Gulf Coast Quarantine*, giving an account of the energetic and successful efforts made to prevent the spread of yellow fever or other contagious disease up the Mississippi Valley last year, is contributed by G. B. THORNTON, M.D., of Memphis, and this highly creditable volume concludes with a complete *Analytical Index*, carefully prepared by MARY M. LINDSLEY, of Nashville, which largely adds to the usefulness of the entire work. J. G. R.

ART. XXX.—*Hay Fever, its Etiology and Treatment, with an Appendix on Rose Cold.* By MORELL MACKENZIE, M.D., pp. 54. London: J. & A. Churchill, 1885.

THERE are many positions encountered in the writings of medical men which by virtue of their common acceptance have come to be regarded in the light of axiomatic truths either from slavish adherence to authority or indifference to inquiry into their claims to scientific recognition. In this way transmission of error is often encouraged by those who, bowing with reverence before the dignity of age and established usage, unconsciously

receive the fallacies taught in school and text-book as primal or fundamental principles of their medical knowledge. The emancipation of the professional understanding from the error of first impressions derived from the dogmatism of teacher and writer is a process of tardy evolution, and it is therefore easy to see how false doctrine universally received and taught by medical men should, when announced by them to the laity, find ready access to the unprofessional mind and influence the popular judgment. The general popularity of the pollen theory of the disease falsely called "hay fever" affords a striking illustration of the truth conveyed in the above reflections. It has been universally taught for years that this affection is due to some mysterious agency contained in the granules of pollen, and the laity have been disciplined by their medical advisers into the belief that the curious *ensemble* of its phenomena is in some inexplicable manner produced by the emanations from grasses and flowers. There is a certain charm about this superstition which commends it at once to the fancy. It is seemingly so natural and plausible to connect the phenomena of the disease with the flowering of certain plants, and the mind so naturally gravitates toward the easiest and most poetical explanation, that it is not surprising that this view should have obtained such universal dominion over the thoughts of the profession and laity. Even those who have in recent years partially forsaken the beaten track into which it has led them are still to a great extent under the influence of its power, and it is therefore not unnatural that not only the profession, but the laity, dominated by the precepts of a doctrine of almost universal acceptance, should receive the alleged relation of the pollen granule to the phenomena of "hay fever" as a fundamental truth, and rest content with the lazy explanation of the affection which it affords.

During the past few years this theory has been slowly driven to the wall chiefly through the investigations of American observers, and new conceptions of the disease have arisen, which, if they have not reached the solution of its pathology, have at least placed this hitherto incurable complaint on the list of curable affections.

The essay before us is an apology for the pollen theory, and challenges attention, not on account of originality in the subject-matter, for the line of reasoning is essentially the stereotyped one so long employed by the advocates of this view, but because a representative man, like Dr. Mackenzie, has undertaken to lead the forlorn hope of a dying hypothesis against the host of facts which are daily marshalling themselves against it.

In view of its many inconsistencies and contradictions, and in the light of recent observation, the refutation of the pollen theory seems a work of supererogation, but, in justice to our distinguished author, we will call attention to a few of the many unanswerable objections which bear directly on his contention.

The orthodox articles of Dr. Mackenzie's accepted faith are embraced in the following fundamental propositions: (1) That the disease is produced by the pollen of grasses and flowers, the granules of which are endowed with a peculiar vitalized principle which possesses "exceptional qualities . . . as a living organism capable of undergoing some degree of development when deposited on mucous membranes more or less exposed to the air;" (2) that, as the pollen granules containing this vital principle are only one-tenth the size of the blood-corpuscles, it is highly probable that they enter the bloodvessels by actual penetration of their walls, and it is not improbable that the *malaise* experienced in hay fever is due to the

presence of this granular matter in the general circulation. In accordance with this view, he has selected as the motto for his essay the well-known Virgilian proverb "*latet anguis in herbâ.*" At the same time, he confesses, with those he follows, that the persons liable to be thus affected by pollen are possessed of a peculiar idiosyncrasy, although upon what the latter depends is "quite unknown." In other words, Dr. Mackenzie advocates the theory which derives its popularity mainly from the writings and experiments of Blackley, in whose footsteps he closely treads.

Let us consider these positions in detail, and in the first place inquire, "Is there anything in pollen to produce the disease in question?"

Dr. Mackenzie makes the unqualified assertion that "Blackley's experiments leave no doubt that the cause of hay fever is *the action of pollen on the mucous membrane.*" To this statement we must respectfully, but emphatically demur. While due credit should be given for the painstaking way in which Mr. Blackley conducted his experiments, it must be at the same time acknowledged that they fell far short of the accomplishment of the object for which they were carried out. They prove one thing, and one only, that in an isolated case, and that his own, at least pollen *may act as an exciting cause of the paroxysms* of the disease. They by no means show, as Dr. Mackenzie and others wrongly infer, that pollen is the sole exciting cause of the paroxysm, and that the latter may not be produced by heat, light, and other external agencies. The negative effects of heat, light, and ozone in his own case are utterly valueless in view of the demonstrated fact that these agents excite the paroxysm in many other individuals. So far from proving that "hay fever" is due to the action of pollen on mucous membranes, they fail to throw any light whatever upon the true cause of the affection. It is not our object in this review to expose the many vulnerable sides of Blackley's work, which is so often quoted, but apparently so rarely read. His conclusions have been handed down from author to author as *ex cathedrâ* utterances from which there is no appeal. While his experiments were carried out in the first instance presumedly in a strictly scientific spirit, it is sufficiently evident, from his subsequent publications, that his mind was so swayed by the pollen theory as to render it unreceptive to new facts and new discoveries. Neither he nor his followers attempt to reconcile the inconsistencies and contradictions which are the logical outcome of his hypothesis. As a specimen of his line of reasoning, the powerful blow which Beard dealt the pollen theory is met with the observation that the gentleman is a member of two neurological societies, and that, therefore, the researches of this notoriously painstaking and accurate observer are open to serious objection.

While Blackley showed that in his own case pollen acted as an exciting cause of the paroxysms, it has, on the other hand, been conclusively demonstrated that there are a host of other agencies, external and internal, which produce exactly the same result. Our own observations, based on the analysis of a large number of cases, teach (1) that there is practically an infinite number of causes which may precipitate the attack; (2) that one irritant is of itself insufficient to produce the paroxysm, the latter being only possible from abnormal functional activity of the nerve-centres, inherited or acquired; (3) that in the majority of cases the paroxysms are induced by a variety of agencies differing entirely in character and mode of operation; even in those cases in which there is apparently only one exciting cause, it will generally be discovered that

there are conditions which bring about the attack other than the alleged solitary exciting cause; (4) that the latter may be operative only during certain periods of the year, or may provoke a paroxysm, without regard to season, whenever applied; (5) that it may be said, in general, that the exciting cause may produce its effect, by direct or indirect (reflex) irritation of the sensitive nerves of the nasal and other mucous membranes; through olfactory impression or through simple association of ideas; or the same result may be brought about by physical or mental over-exertion or emotional excitement; (6) that typical paroxysms occur in some persons at any season of the year, from a variety of causes, but especially from sudden changes in the temperature, or from electrical disturbances of the atmosphere; (7) that paroxysms may be produced as reflex phenomena from irritation of a distant organ, or from some excitation starting in the nerve-centres themselves; (8), finally that pollen is only one of a host of exciting causes, and there is reason to believe that in some cases in which it is supposed to be the excitant, it has little or no influence at all.

As an illustration of the effect of a purely psychical impression in the production of the paroxysm, we would call attention to our experiment with an artificial flower related at the last meeting of the Laryngological Association. Dr. Mackenzie alludes to an exceedingly interesting case of his own, which supports the views concerning an occasional psychical element in the etiology, although he gives to it an interpretation which, in our opinion, is unwarrantable. A victim of "hay fever," after a visit to the Royal Academy, where she had seen a highly realistic hay-field of Mr. Vicat Cole, had a severe attack of the disease. Dr. Mackenzie hesitates between the natural explanation afforded by the association of ideas, and the possibility of her having passed a hay-cart on her way home; "the latter solution, if more prosaic," is also, according to him, "more probable."

There is another case in literature identical with that mentioned by Dr. Mackenzie, and the two open our eyes to the fact that the association of ideas sometimes plays a more important part in the production of a paroxysm than the supposed vital property of the pollen granule.

There is absolutely nothing in pollen to cause the group of phenomena known as "hay fever." To urge the existence of some inherent vital principle which develops a peculiar power when deposited on a mucous membrane is one of those gratuitous assumptions which from the insecure foundation upon which the pollen theory rests, and which have no scientific reason for their acceptance. It is certainly more rational and more in accordance with the facts in the case to infer that the influence of local irritants is mechanical or chemical, and that their power to excite a paroxysm depends upon their physical properties, and the length of their sojourn in the nasal chambers. The glutinous character of some substances, the irregular surfaces of others, will give rise, for example, to more prolonged irritation than substances of smooth contour and less tenacious qualities which are readily swept out of the nostrils. As the irritation of worms or morsels of undigested food retained for a long while in the gastro-intestinal canal give rise to convulsions, cough, and other reflex disturbances through the constant irritation of the readily impressionable nerve-centres of the infant, so the prolonged excitation of the hyper-sensitive vaso-motor centres of the "hay fever" sufferer by the external irritant may evoke the vaso-motor disturbances which are the leading characteristics of the complaint under consideration. The cause

of the convulsion is not the worm or the undigested particle of food, but the prolonged action of a local irritant upon a naturally excitable nervous organization.

While nearly everybody is exposed to the action of pollen on the mucous membranes, comparatively few suffer from the disease, which latter is, moreover, most commonly met with among those least subjected to the alleged exciting cause; for, although confined to no particular class, it is a well-known fact that it is most frequently observed in the cities, and is comparatively rarely encountered among the agricultural population. The explanation of this consists in the fact that the latter are less predisposed to catarrhal affections in general, and disorders of the nervous system. At least, this is obviously more satisfactory than the position that constant exposure to the exciting cause produces tolerance. The occurrence of the disease in situations and under conditions in which the presence of pollen is out of the question strongly militates against the theory that pollen is the sole exciting cause. The relief or immunity from the disease found by the seashore and on the mountain top is readily explained by the well-known beneficial effects of these regions on catarrhal and nervous affections. In other words, the influence of locality upon the disorder is climatic and tonic, and has little to do with a diminished amount of pollen in the atmosphere of a given region. The depressant effect upon the nervous apparatus of the heated land breeze is probably more potent in the production of a paroxysm than the emanations that may be carried along with it. The occurrence of the disease far out at sea has been met by the assumption that clouds of pollen must have been wafted thousands of miles to the ship that carried the unfortunate victim, or that in the unfurling of the sails "a large quantity of pollen collected in their folds was set free," and is illustrative of the form of reasoning by which the advocates of the pollen hypothesis seek to escape from their dilemma. Indeed, the whole line of defence adopted by the pollen theorists is assumptive rather than demonstrative or argumentative, and consists in an apparent endeavor to involve the logic of facts in a tissue of seemingly plausible suppositions.

Equally unanswerable objections to the pollen theory are those which relate to the influence of race, education, modes of life, climatic influences, geographical distribution, etc., while its inconsistency is shown in the fact that while the disease is supposed to be due exclusively to the emanations from plants, it is at the same time universally contended that the affection is one confined to the social and intellectual life of the present century. And so we might go on to enumerate many other facts fatal to the assumption that the disease is due to pollen, such as its complete disappearance in some summers, the non-correspondence of the hay season in America and the period of the attack (Wyman), the marked periodicity of the attack apart from the possible presence of pollen, its regular appearance at a certain hour and on a certain day, pointing to derangement of the nervous system, etc. etc. The alleged exact correspondence of the onset of the disease and the flowering of certain plants is unfortunately more apparent than real, and, according to our observation, the period of attack is related more to moisture or heat, or both combined, to rapid temperature changes, and to other thermometrical and barometrical conditions than to the presence of pollen in the atmosphere.

It will thus be seen that the influence of pollen is narrowed down to a very contracted sphere—that it is simply one of an indefinite number of

external agencies which are capable of producing a paroxysm, and that there are excellent grounds for the belief that in many cases in which it is assumed to be the exciting cause, it has little or no influence at all except through the association of ideas.

Let us turn now to that portion of our author's creed which relates to the penetration of the vessel walls by the pollen granules and their accumulation as foreign matter in the blood. We cannot contemplate this proposition without an involuntary shudder, especially when we view it in the light of a possible destroyer of some of our most pleasant relations with the outer world. It is but just to Dr. Mackenzie to say that this luminous idea originated in the brain of a Mr. Wright Wilson, who some years ago flashed across the literary horizon in that highly instructive portion of the *London Lancet* devoted to notes and queries from correspondents. Dr. Mackenzie seems to have been the only mortal who caught the heavenly vision, and to him therefore belongs whatever credit attaches to the discovery of Mr. Wilson and his theory. As far as our knowledge goes, Mr. Wilson and Dr. Mackenzie are the only authors, living or dead, who have gravely announced their belief in this proposition, and we hazard the conviction that, upon reflection, the latter will leave to the former the exclusive honor to which he is most justly entitled. We even venture to predict that in the coming ages—ay, to the end of time—Mr. Wilson will remain the solitary champion of an idea which, for fertility of fancy and perfect independence of natural law, shines above all other such conceptions.

". . Velut inter ignes
Luna minores."

Dr. Mackenzie characterizes as "zealous bacteriomaniacs" those who seek in specific organisms the cause of the affection under review. If the germ-theorists be in truth "bacteriomaniacs," under what variety of mania do those fall who attribute such terrible properties to the innocent pollen granule?

While this remarkable theory may be regarded as illustrative of the extent to which the pollen advocates allow themselves to be carried by their dominant idea, it must nevertheless be confessed that it opens up an unending vista of possibilities to the speculative eye of the imagination. Through ciliated epithelium, basement membrane, and vessel wall, the dreadful vitalized amœboid pest of the summer months is launched into the general circulation. Does it feast on the nuclei of the white corpuscles as its legitimate prey, or does it seek its pabulum in the more organized and nutritious protoplasm of their redder and more numerous companions? Is it carried into remote organs on the crest of the serous wave, or is it whirled through the circulation on the back of the red blood-cell? Is the dyspnœa of this disorder due to pollen emboli in the lungs or to granular invasion of the respiratory centre? Are we at last to realize the poetic conception of

". . Quick effluvia darting through the brain,
Die of a rose in aromatic pain"?

The solution of these and similar problems must be unfortunately deferred until a time when the human mind is ready for the conception of Mr. Wilson, when the diagnosis of the affection shall be made with the microscope, and when the blood-stained pollen granule will rank with the tubercle and comma bacillus as a priceless legacy of medicine to man.

We regard it easy of demonstration that pollen or any other form of matter is insufficient *of itself* to produce the disease or excite its paroxysms. The cause of the affection must therefore be sought, not in the outer world, but in some personal susceptibility to certain forms of irritation—some morbid condition of the system either as a whole or in part. While it is undoubtedly true that the inhalation of external irritants—and pollen is only one of a host of such substances—acts as an exciting cause of the paroxysm, it is at the same time beyond question that careful inquiry will discover its influence to be purely secondary or accidental, to be dependent upon some local or constitutional condition. The solution of the question lies then in the direction of some localized or systemic derangement of the subject himself.

That the development of the affection presupposes some morbid condition pertaining to the individual seems almost evident to intuition, and it is therefore surprising that its essential cause should have been so long sought for in objects derived from the external world. Even the most enthusiastic advocates of the theory of external causes are forced to admit an essential predisposing influence without which the exciting cause is inoperative, and in its admission they unwittingly wreck the theory they attempt to defend. Blackley himself acknowledged a special predisposition or idiosyncrasy, and Dr. Mackenzie, while in one portion of his essay advocating the pollen theory, pure and simple, in another announces his belief that the affection is an idiosyncrasy, that it is characterized by and leaves behind it no structural lesion, and is therefore destitute of a pathology!

The confession that the disease is an idiosyncrasy is inconsistent with the tenets of the pollen theory as formulated in the two main propositions of our author's contention,—is incompatible with the assumption that the disease is produced by the action of a peculiar vitalized principle (resident in pollen) upon the mucous membrane. If it be in truth an idiosyncrasy or innate peculiarity in the sense used by Dr. Mackenzie, it follows that the pollen theory is not only unnecessary, but fallacious. The admission of idiosyncrasy as the essential factor is a practical recognition of the inadequacy of the pollen speculation and a virtual surrender of the question. The explanation of the disease by the theory of idiosyncrasy and its explanation by the pollen theory represent two distinct and opposite ideas, two separate and antagonistic hypotheses. We fail to see, therefore, how this view, which may be appropriately termed the botanico-psychological theory, and which is formed of two mutually destructive propositions, brings us any nearer the solution of the pathology of "hay fever."

Idiosyncrasy is a word, not an explanation, which practically conveys no definite idea concerning the essential nature of the disease, and is tantamount to a confession of "learned ignorance." In a former communication, we observed that, when certain morbid phenomena were inexplicable by known pathological laws or did not come within the range of speculation based on experimental research, the term idiosyncrasy was sought as a convenient refuge for acknowledged ignorance. Dr. Mackenzie objects to this on the ground that the term is, on the contrary, "a convenient word to express certain series of phenomena which have not been explained." Now, as "idiosyncrasy" stands for a condition of which we have no knowledge, and of which we can form no conception, it involves the idea of hopeless ignorance. If we have no conception of a supposed state, it is idle to attempt its explanation by a mere word—an

empty term, which, although suggestive in one respect, is at the same time a terse, emphatic way of expressing a defect in our knowledge and observation, and carries with it the inevitable confession that the matter to be explained is inexplicable. We consider, therefore, the use of the term employed by us and that cited by Dr. Mackenzie to be practically equivalent to the terms of an equation which will be found upon analysis to be equal to each other. It seems scarcely necessary to linger thus upon a matter so self-evident, but we cannot refrain from calling attention to the following words of Locke as pertinent to the subject of the present inquiry: "He that knows not what he himself meant by a learned term, cannot make us know anything by his use of it, let us beat our heads about it never so long. Whether we are able to comprehend all the operations of nature and the manners of them, it matters not to inquire, but this is certain, that we can comprehend no more of them than we can distinctly conceive, and, therefore, to obtrude terms where we have no distinct conceptions, as if they did contain, or rather conceal something, is but an artifice of learned vanity to cover a defect in an hypothesis or our understanding."

Dr. Mackenzie defends the idea of idiosyncrasy by means of illustration and comparison, but it should be remembered that the former is not explanation, the latter not argument. That Julius Cæsar Scaliger turned pale at the sign of a water-cress, that some persons are taken with nettle-rash after the ingestion of fish and fruit, certainly does not bring us nearer the conception of idiosyncrasy, much less the complicated etiological relations of "hay fever." Neither does the comparison instituted by Marsh between the effects of the poison-oak and those of the pollen granule throw any light upon the subject, for between the two there is neither parallel nor analogy.

To set aside, therefore, the important internal factor in the etiology of the affection, wherein the whole solution of the question lies, under the specious terms, special proclivity or predisposition, individual peculiarity or idiosyncrasy, is virtually equivalent to saying that we have no sufficient explanation to offer, for, as Dr. Mackenzie himself justly remarks, "it would cease to be an idiosyncrasy if a satisfactory explanation could be arrived at." The more we reason in this direction, the more involved the subject becomes, and we are therefore not surprised that Dr. Mackenzie, weary of involution and obscurity, finally surrenders the whole ground in the following honest sentence: "Nevertheless, it must be freely admitted that no theory explains why pollen should prove a highly exciting substance to the mucous membrane of some persons, and not to others." "Hay fever" is not an idiosyncrasy, but a disease—a definite morbid state, the elucidation of whose phenomena must be sought in the study of pathological law, and not in an inquiry into the process of plant reproduction. But, it may be naturally asked, Is there any explanation of the phenomena of the disease which is better than that of an assumed "idiosyncrasy"?

Let us search for the answer to this question in the literature of the past decade. In 1876, Dr. George M. Beard, of New York, wrote a work on "hay fever," based upon carefully collected statistics, in which he surveyed the problem from a standpoint entirely different from that taken by previous investigators. As the result of his observations and inquiries, conducted in an accurate, scientific manner, he pronounced "hay fever" a functional disease of the nervous system, closely allied to sick-headache.

Its alleged almost invariable appearance in the higher walks of life, and notably in those of superior intellectual attainment, together with its assumed absence among inferior races, was dexterously wrought by him into the conception that the affection is the offspring of a higher civilization, the outcome of a hypersensitive nervous organization, the result of the enervating influences of nineteenth century social and intellectual life. While he does not explain in what such a neurosis consists, while his researches and conclusions are open to fair criticism, they nevertheless threw a new light upon the subject, and opened up a broader and more scientific pathway of research. Whatever he failed to do, he established the important fact, that an important factor, if not the chief in the disease resides in some imperfectly defined condition of the nervous system. Hay fever, according to Beard, is the complex resultant of a number of different external exciting causes (30) acting upon a nervous system debilitated by the injurious influences of modern social and intellectual life.

Five years later another important fact in connection with the disease was brought to light by Dr. Daly, of Pittsburgh, who showed that in a fair proportion of cases there is local disease of the nose and nasal pharynx (from simple hyperæsthesia to pronounced structural changes, such as hypertrophic catarrh, polypi, etc.), without which the exciting cause (pollen, bacteria) is innocuous, and that the cure of the affection may be accomplished through removal of the local intrinsic condition (by cauterization with acid, electric cautery, etc.), a position which he established by most convincing practical proof. To this observer belongs the credit of formulating the treatment of the disease by measures addressed to the nasal and nasopharyngeal chambers. According to Daly, we are only justified in looking upon "hay fever" as a neurosis when the affection persists after removal of the local nasal disease. Daly attempted no explanation of the mechanism of the disease, but simply announced a clinical fact and the treatment based upon it.

The following year, Dr. Roe, of Rochester, published the successful results of his treatment of the disease by the operative method, and related a number of cases in which a cure had been effected. According to him, the affection is due to the action of pollen upon the nasal mucous membrane, which in some persons is rendered peculiarly susceptible by active or latent disease of the naso-pharynx associated with hypertrophic catarrh of the nasal passages. The asthma and other manifestations of the paroxysm are due, he believes, to reflex congestion of the mucous membranes of the several organs in which their effects are manifested. While Dr. Roe believes the exciting cause to be pollen, he at the same time contends that, in order to the production of a paroxysm, "latent or active," nasal disease must be present, that the nervous symptoms are secondary to the hyperæsthetic condition of the nostrils, and that the latter is not the effect but the cause of the neurotic feature of the disease.

In the same year we published the results of some experiments made by us with reference to the localization of reflex sensitive areas in the nasal passages, which, we venture to believe, throw some further light upon the subject. These observations led us to the belief that the area most sensitive to reflex producing impressions is represented by that portion of the mucous membrane which covers the turbinated corpora cavernosa, that reflex acts are only exceptionally awakened from irritation of other portions of the nasal fossæ, and that all parts of the erectile area are not equally susceptible to irritation, the most sensitive spots being

located in the mucous membrane covering the posterior extremity of the inferior turbinated body and the septum immediately opposite. These views of the sensitive area were opposed by Dr. Hack, of Freiburg, who maintained that all reflexes arise from congestion of the cavernous tissue of the anterior end of the inferior turbinated bone. The views of Hack on "hay fever" are similar to those of Daly and Roe. According to him, two factors are necessary to the paroxysm, a hyperæsthetic condition of the terminal filaments of the fifth and olfactory nerves and an increased irritability of the cavernous tissue, caused, as a rule, by local nasal disease, and he inclines to the belief that the neurasthenic symptoms are secondary to the nasal affection.

In 1884, a still more exclusive view was put forth by Dr. Harrison Allen, of Philadelphia, who held that the affection depended solely upon obstruction or tendency to obstruction in the nasal passages; he also called attention to the fact that (in his experience) in the sufferers from this disease, the inferior turbinated bones lie well above the floor of the nostril, a condition which subjects the mucous membrane covering them to additional irritation from external causes. These observations of different physicians, working independently of each other, viewing the subject from different standpoints, while not perfectly harmonious, nevertheless present a singular unanimity in their recognition of the necessity of therapeutic measures addressed to the nasal passages as a prime factor in the treatment of the disease. While they render it probable that certain states of the nasal passages are necessary to its production, they do not demonstrate the fact that local nasal disease is the sole excitant of the paroxysm. The views given above have been confirmed by the clinical experience of a number of physicians, among whom may be prominently mentioned Drs. Sajous, of Philadelphia, Bosworth, of New York, and Ingals, of Chicago. Several months after the publication of Dr. Allen's views, we endeavored to reconcile the discrepancies met with in the results of different observers, and advanced the theory which we give here in brief:—

According to our conception, as outlined in several articles published during the last few years, the so-called nasal reflex neuroses, whether taken singly or collectively, as in the case of the *ensemble* of phenomena known as "hay fever," may be regarded as the Protean manifestations of a morbid condition, to which we have given the name *Rhinitis Sympathetica*, and which is characterized by a hyperæsthetic condition of the vaso-motor nerve-centres linked to a peculiar excitability of the nasal cavernous tissue. For, if we inquire what condition or conditions is common to them all, and what morbid process is capable of producing them either singly, or in combination; how phenomena apparently so widely different in character and anatomical sphere of operation may be traced to a solitary source, we find the answer in certain more or less clearly defined changes in the nasal apparatus and in a certain exalted state of the sympathetic nervous system, to which latter we instinctively turn as the organ most conspicuously concerned in the evolution of purely reflex acts. In whatever relation the local nasal affection and the condition of the sympathetic stand to each other in the matter of cause and effect, they must both be regarded as inseparable factors in the production of the phenomena under consideration. It matters not to what hypothesis the path of speculation may lead. Of this we can be reasonably sure, that in order to the production of the characteristic symptoms of this disease, a certain excitability of the nasal

passages is necessary, *plus* an exalted state of the central nervous system.

From our present knowledge of the disease, it seems difficult to escape the conclusion that its pathology is intimately interwoven with a morbid condition of the vaso-motor sympathetic, and probably a hypersensitive state of the nerve-centres themselves. When we recall the fact that in the famous section of the sympathetic in the neck by Claude Bernard symptoms similar to, or closely allied to the phenomena of hay fever were produced; when we reflect upon the results reached by Prevost in his experiments on the spheno-palatine ganglion, is there not a clue to lead us through the labyrinth of our difficulties to a rational solution of the question? Whatever be the essential cause of the disorder, do not its phenomena point directly to a circumscribed disturbance of the vaso-motor sympathetic? What the histological condition of the centres or the nerves themselves may be, is in the present state of our knowledge a matter of conjecture; but this much is probable, that their normal impressibility is so increased that when subjected to various forms of stimulation an explosion of nerve-force takes place which is represented to our senses by certain vaso-motor disturbances in the nasal passages and other portions of the mucous tract dominated by the cervico-occipital sympathetic. The organs which bear the brunt of the attack are the nasal passages, and the exalted condition, erethism of the turbinated corpora cavernosa, is therefore the leading, distinguishing and characteristic feature of the paroxysm, constituting, as it were, the central symptom around which the other phenomena of the paroxysm are grouped, and from which many of them proceed, either as the result of mechanical causes or from reflex action. The discomfort and more serious symptoms of the disease commence with the swelling of this tissue, and are dissipated with the subsidence of the same. Whatever be the exciting cause of the paroxysm, the tendency to secondary erection of this tissue plays an important *rôle* in its mechanism, and, just as in an ordinary coryza, the central symptom, the most prominent condition, is represented by the swelling of the cavernous bodies. Indeed, whatever the other elements of the paroxysm may be, the phenomena referable to the cavernous tissue constitute the mainspring of the machinery by which it is set in motion. As the distinguishing feature of the paroxysm resides in an exalted condition of this tissue, by diminishing or abolishing its reflex excitability we eliminate the leading element in the complex mechanism of the attack. Now, our experience shows that, while all parts of the nasal mucous membrane may be sensitive to reflex-producing impressions, the most sensitive area is located in the lower posterior portions of the nostrils, a zone corresponding to the distribution of the spheno-palatine branches of the superior maxillary nerve as distinguished from the nasal branch of the ophthalmic. The former nerve, derived through the spheno-palatine ganglion, probably contains therefore the vaso-motor fibres which govern the erection of the turbinated tissue, and as the sympathetic filaments which have been traced to the nasal passages are found in greater abundance over this area, we may for practical purposes speak of a *nasal plexus* located in the sensitive area and intimately associated with the evolution of the nasal reflex. The clinical observations of Roe, Sajous, Ingals and others, and our own, show that this is precisely the area of greatest turgescence and excitability during the paroxysms of the disease, and the localization of the "sensitive area" may therefore be looked upon as the key to the mecha-

nism of the attack. Just here, we would like to call attention to a property of erectile tissues which is consonant with the ideas of reflex excitability formulated above, and which may possibly in a measure explain the relation of erection of the nasal cavernous tissue with the vaso-motor manifestations of the sympathetic form of rhinitis. In the human body, wherever erectile tissue is found, it is intimately related to reflex or sympathetic acts; there seems to be connected with it a certain receptivity to reflex-producing impressions, a certain power of reflex excitability dependent upon its structure and functions. It is thus peculiarly a tissue of sympathy in which we may most satisfactorily study the mechanism of purely reflex or sympathetic acts. Now it seems to us, that, as the nasal corpora cavernosa belong to this class of sympathetic tissues, there will be little difficulty in explaining the *rôle* which they play in the paroxysms of an affection which is probably connected with, if not dependent upon, an excitation of the sympathetic nerve-centres, and in more clearly defining the intimate relation which its erection bears to the reflex manifestations of the disease under review.

For practical purposes, then, we may regard the affection as a coryza dependent upon some derangement of the nerve-centres as its essential cause. The latter may be inherited or acquired; in the latter case it may be brought about in a number of different ways. In the first place it may be the result of pathological conditions of the nasal passages themselves, generally associated with repeated and prolonged erection of the cavernous tissue with subsequent abnormal irritation of the nerve-centres. The nasal disease itself may be developed in the first instance from direct or indirect (reflex) irritation, begetting a hyperæsthetic condition of the nasal passages, and eventually disordered activity of the centres. When therefore the former are exposed to undue irritation, either from *ab extra* influences or from internal causes, an explosion of nerve-force takes place in the centres which expresses itself as a paroxysm. We might illustrate this mechanism by referring to the operation of the *aura* in epilepsy, and the excitation of the spinal nervous system produced by abuse or disease of the generative apparatus.

The excessive irritability of the nasal tissues may be brought about, in another class of cases, by an exalted state of the central nervous system, leading eventually to derangement of the vaso-motor centres, or, finally, a hyperæsthetic condition of the latter may be occasioned by other pathological states of the system as a whole, or as the result of reflected irritation from its individual parts. Whatever be the avenue through which the exciting cause operates, two factors seem to be inseparably associated in the production of the paroxysm—a hyperæsthetic condition of the nasal erectile area, and a derangement of the nerve-centres.

In calling special attention to the irritability of the nasal erectile—or contractile—tissue, we do not by any means seek to overlook the vaso-motor manifestations in other portions of the respiratory apparatus, and even in other organs not directly connected with it. On the contrary, the explosion of vaso-motor force expends itself upon other portions of the tract dominated by the cervico-occipital sympathetic. Just as in a cold in the head, we have symptoms referable to the lower respiratory tract, aural apparatus, eye, etc., so in this form of sympathetic coryza we have disturbances in these and other organs of the body. But the symptoms which stand out in conspicuous prominence are those which spring from the erection of the turbinated tissues. That the manifestations included

under the head of asthma, cough, congestion of the conjunctiva, etc. etc., may proceed from this source alone, is shown by their immediate dissipation upon removing the source of irritation in the nasal passages by topical applications, instrumental interference, or by the artificial contraction of the swollen tissues. We have been able to illustrate this by the following experiment. In the course of our treatment of one of our cases with the cautery, we noticed that, when the applications were confined to one nostril, the phenomena referable to the corresponding side of the head were completely dissipated, whilst those of the opposite persisted and were only removed upon cauterization of the mucous membrane of that side.

During the paroxysm this tissue, in our experience, is invariably congested and swollen, and exhibits a characteristic irritability entirely out of proportion to that found under ordinary circumstances, that is to say, in simple inflammation of the passages. Indeed, in a large proportion of the class of cases commonly known as "reflex neuroses," this irritability is so exquisite as to render the contact of the blandest applications unbearable to the patient, and this apart from the presence of any of the exciting causes of the paroxysm.

In transferring the point of greatest excitability from the peripheral ends of the nerve-filaments to the centres themselves, we are fully aware of the want of experimental proof in favor of such a view, but we believe that it affords a more comprehensive explanation of the complex phases of the disease than that which is based on the assumption of organic changes in the terminal filaments of the sensitive nerves.

In accordance with the views expressed above, we proposed some time ago to substitute, for the various names given to this affection, the term *coryza vasomotoria periodica*—a proposition to which Dr. Mackenzie objects on the ground that it involves the acceptance of an unproved theory, although he employs one himself which involves the resurrection of a disproved hypothesis. While we do not claim that the theories advanced by American physicians embody the complete and final settlement of the question, we regard them as less objectionable than those heretofore advanced; we believe that, in indicating the line of future research, they bring the problem one step nearer its solution, and that by viewing it from the standpoint they suggest, we may catch a broader glimpse of its protean aspects, and be in a securer position to relieve the sufferings of our patients than if we follow the narrow pathway along which the pollen theorists ride their hobby to an invariably unsatisfactory and unsuccessful result.

To our views on the subject of "hay fever," Dr. Mackenzie has two objections to offer: (1) that we do not "realize the true nature of hay fever as a periodical disease occurring *only* during the season when hay or certain flowers are in blossom;" and (2) that "our views of the sensitive area are directly opposed by Dr. Hack, who holds that reflex manifestations do not occur until the anterior part of the lower turbinated body has first become turgid." In regard to the first objection we have this to say: first, that we distinctly recognize the paroxysmal or periodical nature of the disease, both in our definition and in our first communication on the subject; secondly, that while it is true that a large proportion of cases suffer only during certain months of the year, our clinical observation teaches us that in a certain number typical paroxysms occur at all seasons of the year, provided the patients are subjected to the conditions which we have outlined above. Dr. Mackenzie apparently reasons from the assumption

that the complex etiological relations of the disease have been thoroughly investigated and definitely determined, and seems to disregard the fact that we are yet on the threshold of inquiry in this direction, that we are just beginning to discover in the many phases of this affection things undreamt of before in our philosophy, and that the true conception of the disease can be reached, not from the exclusive study of external causes, not from the hasty generalizations of isolated experience, but from the higher vantage-ground which overlooks the subject in all its bearings, which brings within our range of vision new facts and new discoveries, from which, in fine, we can regard more clearly the subject himself, and his complex relations to the external and internal forces by which he is influenced and surrounded. As an idiosyncrasy stands for something which is inexplicable, and as "nothing explains why some persons should be affected by pollen and not others," a correct and adequate definition of this affection from the standpoint of Dr. Mackenzie is a logical impossibility. If we have no clear conception of the essence of a thing, it is obviously impossible to define it, and it is therefore highly unscientific to measure the value of independent observation by the criteria of an arbitrary definition.

To Dr. Mackenzie's second objection we would reply that our observations upon this subject have received the independent support of competent observers both in this country and abroad, and that Prof. Hack, in his more recent pamphlets, which doubtless had not reached Dr. Mackenzie at the time his essay went to press, has retreated from the exclusive views which he held in his original publication. It is interesting to remark just here, that, while Dr. Mackenzie unhesitatingly approves the result of Prof. Hack's investigations in this direction, he nevertheless, a few pages further on, makes the most deprecatory insinuation concerning the work of his German *confrère*, who has done so much to throw new light upon this field of nasal pathology. The objection which he urges to the contention of Drs. Daly, Roe, and Allen, that "so few of the many sufferers from nasal disease are affected by the pollen of plants," assuming that the disease is caused by pollen, would be admissible were it contended that the affection is a simple nasal inflammation, and that there is no other factor at work in the mechanism of the paroxysm; but it obviously does not apply to the views outlined above. Applied to the pollen theory, it would carry that interesting conception to a depth from which there could be no resurrection.

Whichever theory be correct, when we come to consider the subject in the light of practical results, we find that the pollen theory offers no hope in the direction of cure; the measures based upon it are simply palliative, and in some respects ludicrous in the extreme; while, on the other hand, the views formulated above offer a prospect of relief in every case and permanent cure in a fair proportion. The cure of the disorder by remedies addressed to the nervous system, to the nasal passages, or both, amounts to the most convincing demonstration, and is a complete and practical answer to the pollen assumption. Dr. Mackenzie's deprecatory remarks on the treatment advocated by American physicians can have very little weight, as he acknowledges that he has but imperfectly studied the question from their standpoint, and has had no practical experience with the improved methods they suggest; but it is a significant fact that the only Englishman who has adopted the American plan, Mr. Lennox Browne, has obtained from it most satisfactory results. If the dissipation of the disease by a given method does not offer "a sufficiently favorable prospect" to

justify its adoption, what better criterion of its efficacy, it may be asked, would Dr. Mackenzie require in judging of the merits of the operation? There is, perhaps, no more striking commentary on the inadequacy of the pollen speculation than the Cimmerian darkness it has thrown around the treatment of the disease, and we are therefore not surprised when Dr. Mackenzie informs us that the treatment is "unsatisfactory," and that "prevention is better than cure." But let us turn our eyes for a moment from the horrors of the American method to the pleasant prospect of relief afforded by the pollen theorists, and reflected in the pages of Dr. Mackenzie's essay.

If a life on the ocean wave or a home on the rolling deep be impracticable, "dwellers in towns should avoid the country" and those who reside in the country should proceed at once to "the centre of a large town," or, if this be out of the question, "the patient should remain, if possible, within doors during the whole of the hay-fever season." Active exercise should be carefully avoided, and if the sufferer ventures out of doors, "he should, if possible, avoid the middle of the day," or, if obliged to sally forth at that inauspicious hour, "should protect his eyes by wearing spectacles with large frames accurately adapted to the circumference of the orbits; or he may find some advantage in wearing a hat with a very broad brim." As rapid motion in the open air aggravates the complaint, "it may be advantageous to wear a veil over the face whilst driving or riding. One made of 'three ply' of fine silk gauze has been recommended," but Dr. Mackenzie finds a "double gossamer," which can be had in several colors, answer the purpose in some cases. "Plugging the lachrymal ducts with glass rods," "*closing* the nostrils with a metal clip," and wearing an apparatus containing carbolic acid and camphor within the nostrils, are also suggested to secure comfort to the sufferer. "Protected in this way," says Dr. Mackenzie, "many people disposed to hay fever escape altogether, whilst others contract the disease in a very mild form." To his everlasting credit be it said, however, that he "cannot recommend" the glass rods and metal clip, but he nevertheless adds, "the nostrils may be *plugged* (italics Dr. Mackenzie's) with cotton-wool or wadding by means of one of Gottstein's screws." Apart from many other inconveniences attendant upon such a line of treatment, imagine the tortures of confinement to a closed chamber during the intense heat of our summer months; fancy the spectacle which the victim presents with his eyeballs covered with an unsightly apparatus, his lachrymal ducts filled with glass rods, and his nostrils plugged with cotton—a form of *secundum artem* torture which recalls the ingenuity of Torquemada. But if this should not suffice, consistence with the pollen idea may demand that other avenues be also closed, that the intra- and extra-aural pressure be equalized by tamponing the auditory meatus, and that, in order to avoid the inevitable access of pollen to the respiratory structures which must follow the necessary patency of the mouth, that avenue should be also peremptorily sealed. The experiments of Blackley show that pollen grains may be retained in the clothing for many weeks, and that when let loose upon a mucous membrane they are capable of producing unlimited havoc, and the suggestion naturally arises, why not apply the glass-rod method to the urethra, and the respirator and tampon to the rectum? It has also been proved (to the satisfaction of the pollen theorists) that the disease may commence as an irritation of the skin by the ubiquitous pollen, and it is even possible, if we follow out Mr. Wilson's idea, that the

pollen granule may enter the cutaneous capillaries. But, thanks to chemistry, we have an effectual barrier to such intrusion in shellac. As the pollen granule is one-tenth the size of the blood-corpuscle, it is readily conceivable that the means suggested above may prove ineffectual, and we therefore see no escape from inclosing the patient in some form of apparatus like the diving-bell, to which the air may be conducted from the nearest mountain top. But some captious critic may inquire, "With the *primæ viæ* thus hermetically sealed, how is the patient to breathe under the conditions you suggest?" This conundrum has been solved by a surgical friend of ours, who proposes that, as the lower respiratory tract is probably least sensitive to the action of pollen, the operation of tracheotomy be performed—a proposition which we cheerfully commend to those who follow the treatment of Mr. Blackley.

Let, then, the patient, prepared according to the directions given above, don his broad-brimmed hat, fold about him the three-ply gauze, or double gossamer of the rainbow hue, and hie him to the centre of the nearest town where the passer-by may recognize the embodiment of the victory which science has won over disease—"*monumentum aere perennius.*"

In the light of recent discovery, and in accordance with our views in regard to the pathology of the disease and the mechanism of its paroxysms, we believe that the general principles governing its treatment may be briefly defined as follows: It should be remembered, at the outset, that the vaso-motor manifestations, of which the erection of the turbinated corpora cavernosa is the central and most conspicuous, are secondary phenomena dependent upon a direct impression made upon the nasal mucous membrane, or on indirect influence conveyed or reflected through the vaso-motor centres from a distant organ; or, finally, from some excitation starting in the centres themselves. Any treatment, therefore, addressed to the nasal chambers, except in the case of the destruction of the cavernous tissue, accomplishes thus one result, and one only—it closes one door against *ab extra* irritation of the nerve-centres. In order to exclude completely the influence of the latter, careful search should be made for any pathological condition, systemic or local, which may be regarded as a source of direct or indirect irritation, and appropriate treatment adopted. Recognizing the prime importance of the reflex excitability of the nerve-centres and the resulting vaso-motor manifestations, an endeavor should be made so to alter the nutrition of the central nervous system that the centres may not respond so easily to the reflex-producing impression. Failing in the above methods, the partial, or if necessary complete, destruction of the cavernous tissue corresponding to the sensitive area should be undertaken. In the majority of cases it is neither necessary nor desirable to destroy large areas of tissue, the amount to be sacrificed depending upon the exigencies of the particular case.

The treatment of the disease by cauterization, which has been carried out so successfully in this country and Germany, has been criticized in England and France, but it is a noteworthy fact that the criticisms have emanated from those who have had no personal experience with the method. A recent French writer of this class has gone so far as to characterize it as an "audacious" procedure. But it should be remembered that it was a Frenchman who referred in similar terms to the first operation of McDowell, and a representative Englishman who cried *Credat Judæus Apella* at the mention of a procedure which has done so much to render the modern surgery of Great Britain illustrious.

In that highly instructive and philosophical production, Gil Blas, occurs the following passage, whose application we leave to those of our transatlantic friends who positively refuse to make trial of the American methods:—

"'Sir (said I, one evening to Dr. Sangrado), I take Heaven to witness that I follow your method with the utmost exactness; yet, every one of my patients leaves me in the lurch. It looks as if they took a pleasure in dying, merely to bring our practice into discredit. This very day I met two of them going to their long home.' 'Why, truly child,' answered he, 'I have reason to make pretty much the same observation; I have not often the satisfaction of curing those who fall into my hands; and if I was not so sure as I am of the principles upon which I proceed, I should think my principles were pernicious in almost all the cases that come under my care.' 'If you will take my advice, sir,' said I, 'we will change our method and give chemical preparations to our patients, through curiosity; the worst that can happen will only be that they produce the same effect that follows our bleedings and warm water.' 'I would willingly make the experiment,' he replied, 'provided it would have no bad consequence; but I have published a book in which I have extolled the use of frequent bleeding and aqueous draughts; and wouldst thou have me go and deny my own work?' 'Oh, you are certainly in the right!' said I; 'you must not give your enemies such a triumph over you; they would say you are at best disabused, and therefore ruin your reputation; perish rather the nobility, clergy, and people, and let us continue in our old path.' . . . . 'We went to work, therefore, afresh, and proceeded in such a manner, that, in less than six weeks, we made more widows and orphans than the Siege of Troy.'"

We are sorry that we are compelled to speak thus disparagingly of the views advocated in the brochure of Dr. Mackenzie, but we cannot allow our admiration of the author's ability to interfere with our duty as reviewer. His work is written in his well-known agreeable style, and he has put the pollen theory in as an attractive light as is possible under the circumstances. Championing a feeble cause, his defence is naturally weak, and if he has not thrown new light upon the subject, it is because he is trammelled by the contradictions and many inexplicable questions inseparably associated with the hypothesis into which he has endeavored to breathe new life. He views his subject from the standpoint of Blackley, and has not sufficiently investigated it in the light of recent revelations. We believe that our distinguished author would better employ his powers in exposing its fallacies than in apologizing for a theory which represents not progress, but retrogression.

The pollen idea is better adapted to please the imagination than to persuade the reason. Like the fabled Icarus, in attempting to go beyond its legitimate sphere, it has failed in the accomplishment of its object. Criticism is necessary to knowledge, and erroneous doctrine may in this way lead to more perfect understanding, and in this sense the pollen theory may be said to have accomplished a useful purpose; but, on the other hand, by diverting the mind from more essential etiological conditions, by introducing an insuperable element of confusion into the investigation of the disease, it has contributed in a large measure to retard the progress of therapeutic inquiry. Deliverance from false conceptions based on traditional belief is a task difficult of accomplishment. May we not hope for the co-operation of Dr. Mackenzie in this direction?

Let us, finally, commend to the future historian of this affection the exile of the terms "hay fever" and "idiosyncrasy;" let us hope that the time is not far distant when the pollen theory shall be relegated to its proper historical place as an interesting speculation; that the next essay

which treats of it will bear as its motto the eloquent *in memoriam*, or the terse and homely *hic jacet*. May we not even indulge the belief that the next edition of the work before us will be devoted, not to the resurrection of a defunct hypothesis, but to the elaboration of its epitaph?

J. N. M.

ART. XXXI.—*Pulsating Proptosis and Elastic Tumor of Left Orbit consequent upon a Trauma of the Skull—Ligation of Left Common Carotid.* By ROBERT SATTLER, M.D., Ophthalmic Surgeon to the Cincinnati Hospital. Pamphlet, 12mo. pp. 24. New York, 1885.

In this *brochure*, which is a reprint from the *N. Y. Medical Record* of June 13 and 20, 1885, Dr. Sattler reports a most interesting case of pulsating proptosis, and gives the results of an analysis of all the cases reported up to the present time with especial regard to their pathology, symptoms, and treatment. As this affection is frequently the result of trauma of a part singularly exposed to traumatic influences, it may not be uninteresting to give a *résumé* of Dr. Sattler's extended studies upon this subject, with a view to formulating some ideas in reference to treatment.

The earlier cases were described under a great variety of names by various reporters, these names designating either a theoretic pathological condition, or the clinical features of the disease. Among these names we find some eminently descriptive of the affection, but too cumbersome for general use; such as "rupture of an aneurismal dilatation into the cavernous sinus," and "rupture of the internal carotid and anterio-venous communication within the cavernous sinus.' Other designations are: aneurism by anastomosis, aneurism of the ophthalmic artery, erectile tumor of the orbit, vascular protrusion of the globe, pulsating tumor of the orbit, and pulsating exophthalmus. In this connection, however, it will be seen that it is impossible to bestow upon the clinical features of these cases one name based upon that usually most satisfactory and most scientific classification—the pathological condition; for, as we pursue our studies, we will find that not one alone, but several lesions are capable of producing similar or nearly identical symptoms.

The literature of the subject refers to 113 cases exclusive of the case reported, making a total of 114 cases up to the present time. Of these 26 proved fatal, or, perhaps it were better to say, died under observation, as an intercurrent disease was the cause of death in many cases. Post-mortem examinations were held in 19 cases, but the reports of some of the autopsies are not so satisfactory as might be wished. We find recorded that "unmistakable rupture of the internal carotid and communication with the cavernous sinus was discovered in four cases, all traumatic."

In five additional cases anterio-venous communication was most probable. Only three unquestionable cases of aneurism of the ophthalmic artery are found in the post-mortem records.

A tumor of the orbit was found in three cases, and Dr. Sattler adds one to "the large list of so-called 'pulsating cancer of the orbit,' cited by Noyes, by a case of his own, verified by microscopic examination and a

subsequent autopsy." Three cases of spontaneous rupture of an aneurismal dilatation of the internal carotid into the cavernous sinus are described. One case is reported and described as a "thrombosis of the cavernous and petrosal sinuses" by Bowman-Hulke.

Thus it will be seen that in more than fifty per cent. (12 out of 19) of the cases, the established or most highly probable lesion was "rupture, large or small, traumatic or spontaneous, of the internal carotid, communication with and arterial propulsion into the cavernous sinus and its tributaries."

Aneurism by anastomosis, under which term the first case was described by Travers in 1809, has never been confirmed by post-mortem examination.

The pathology of the affection is the same as that of aneurismal varix or varicose aneurism situated in any other part of the body. According to the extent of the communication between the artery and vein there will be impediment to, arrest or even a reversal of the venous current; and the "back-track evils" resulting from an interference with the venous flow will be more or less pronounced. This may vary from a mere venous plethora to the formation of masses of dilated, tortuous, pulsating vessels in the region drained by the cavernous sinus. The dilatation of vessels and the formation of clots, with the constant deposit of fresh laminæ, lead to pressure symptoms on the nerves traversing the walls of the sinus—the third, the fourth, the sixth, and the ophthalmic division of the fifth. Then come disturbances to the intraocular circulation. The symptoms in a case of this kind are such as might be inferred from a knowledge of the pathology. They are: A wound-like elevation of the palpebral, temporal, nasal, and frontal regions, with an increased thickness of the lids, and an injection and tortuosity of the cutaneous, subcutaneous, and conjunctival veins, chemosis, congestion of the choroid and œdema of the retina; "bossy protuberances," often pulsating visibly and most frequently situated at the upper and inner portion of the orbital opening between the globe and the bony margin of the orbit; proptosis or displacement and pulsation of the globe; a feeling of fulness or pain, disturbances of vision in consequence of ptosis, paralysis of the extrinsic muscles, or disturbance of the choroidal and retinal circulation. Sometimes the pressure symptoms in relation to the nerves are very marked, producing sluggish pupillary movements, myosis, mydriasis, and paresis or paralysis of the motor and sensory nerves of the eye. A marked feature of almost (?) invariable occurrence has been the distressing intracranial noises heard by the patient. These are variously likened to whistling, puffing, the noise of steam escaping from an exhaust pipe, the rattling of a wagon load of iron, purring, cooing, etc.

In concluding his article Dr. Sattler gives an interesting and graphic account of his own case. The symptoms coincide with the classical descriptions given of the affection in those cases which were verified by post-mortem examination. In the treatment conservative measures were first adopted. A very probable case of aneurism of the ophthalmic artery, under the care of Dr. E. Williams, having been successfully treated by means of instrumental compression, the use of arterial sedatives and compression, digital and instrumental, was first resorted to, but without any perceptible modification of the symptoms. The patient was kept in bed and veratrum viride, aconite, and digitalis were administered in increasing doses. Digital compression kept up for fourteen hours by relays of students, and subse-

quently instrumental compression continued for eight hours were tried without avail. More radical measures were then appealed to and ligation of the left common carotid performed. The results of ligation had been peculiarly happy, and in this case promised well as a prospect of relief if not of cure. "Five weeks after the operation the patient was discharged. At this time the following points were noted: Almost complete reduction of the proptosis. Inability to produce pulsation of the globe. Marked improvement in sight, V = 0.9, with — .75 Oph. Diminution of the distressing noises and absence of the feeling of distension and discomfort about the orbit."

About four months later the patient returned, presenting himself in about the same condition as when discharged. He was willing to submit himself to further treatment if it were deemed advisable. Further surgical interference, however, was advised against.

Cases heretofore reported in which ligation was resorted to have been recorded as fatal cases or as cures with the exception of one, Roux's case, "in which no effect was produced upon the disease." This last case of Dr. Sattler's may be regarded as one in which, though a positive cure was not effected, very marked relief was afforded.

The future history of this case would be of interest to note as regards the maintenance, advance, or recession of the disease. It is interesting too to speculate upon the effect of tying the right carotid, or injecting what remained of the pulsating tumors with an irritating solution, or of attempting galvano-puncture.

Enough is now known, however, of the effects of compression and ligation for it to be laid down as a rule almost invariable in its application that resort should be had in the first place to the first of these, and, this failing after a fair trial to relieve or alleviate the symptoms, that ligation of the common carotid should be practised. Ligation of the other carotid, galvano-puncture, etc. must depend upon too many conditions that surround each case to permit us to carry the dictum concerning treatment further than this. C. H. C.

ART. XXXII.—*St. Bartholomew's Hospital Reports.* Edited by W. S. CHURCH, M.D., and JOHN LANGTON, F.R.C.S. Vol. XX. 8vo. pp. xxxi., 35, 382. *With an Appendix including Statistical Tables of the Patients under Treatment in the Wards of the Hospitol during* 1883. 8vo. pp. xxxii., 35, 382, 97. London: Smith, Elder & Co., 1884.

THE St. Bartholomew's Hospital Reports for 1884 contains a most interesting array of papers, of which those on medical subjects largely preponderate over those strictly surgical. A feature also of this volume is the reprint of an old copy of the *Orders and Ordinances for the Better Government of the Hospital of Bartholomew the Lesse*, which was printed in 1652, and which furnishes very entertaining and instructive reading.

The volume opens with a paper on *The Amount of Carbonic Acid in London Air*, contributed by Dr. W. T. RUSSELL. Whilst the application of this paper is one strictly local, Dr. Russell gives a short description of the methods of analysis, and appends tables and charts which interest the general reader.

Dr. GEE's *Miscellanies* are also interesting reading. They comprise short notes on such subjects as: 1. A kind of Eczema: Vaso-paralytic? 2. Nervous disorders affecting a whole family. 3. Respiratory croaking of babies. 4. Extreme and fatal dyspnœa in newly born children (which includes the notes of four cases). 5. Idiopathic dilatation of the large intestine.

Dr. ORMEROD presents a paper on *The Later Stages of Hemiplegia*, for which the notes of twenty cases furnish the material—these cases belonging to a class in which the "original lesion was essentially non-progressive," that is in cases of vascular lesion almost solely. Modifications of the exaggeration of tendon reactions are noted, Dr. Ormerod laying down the rule that "in persistent hemiplegia, (1) there appears, after a certain duration of the disease, exaggeration of tendon reactions on the paralyzed side; (2) that this exaggeration is generally the precursor of permanent rigidity." The exceptions which Dr. Ormerod notes in his cases were as follows: In several cases the exaggeration was considerable and prolonged, and yet there was no rigidity; in three cases the tendon reactions were greater on the sound than on the paralyzed side; athetosis was associated with one of these; in one case exaggeration was found in both legs, which the author regarded as a precursor of actual paralysis or (occasionally) contracture of both legs.

The second group of cases includes several in which the hemiplegia was associated with some disturbance of micturition. In one of these cases both patellar tendon reactions were almost absent, and the incontinence was regarded as an early symptom of tabes. One instance of muscular atrophy and several of disorders of movement, ranging from rhythmical tremors to irregular jerky movements, are added. In two cases in this group the spasm "was not constant, but seemed to merge from time to time into a condition resembling late rigidity." The last group comprises eight cases of post-hemiplegic epilepsy. In these cases there is also a wide range, varying from epilepsy to *petit mal*.

The paper is one of great interest, and well worth careful study, as it embraces a discussion of minute examinations which are ordinarily overlooked in practice.

Dr. DUCKWORTH contributes a *Note respecting two Old Specimens of Gouty Arthritis in the Hospital Museum*, and an interesting report of a *Case of Acute Pemphigus in an Adult, fatal on the ninth day*, one-sixth of the whole surface of the body being involved in bullous eruption.

Dr. MOORE discusses the *History of the First Treatise on Rickets*, and gives the priority to Whistler, whose treatise was published first in Leyden in 1645, and afterwards in London in 1684. A photogravure of both title-pages is appended to the paper, and the treatise is described and analyzed at some length.

Dr. VINCENT HARRIS and Dr. DARBYSHIRE contribute short papers entitled respectively *Observations on Anæmia*, and *A Case in which Milk was the Vehicle of the Infection of Scarlet Fever*.

In Mr. SHORE'S paper on *Pericardial Effusion* full notes of three cases are included, and as a conclusion the author advises that exploratory puncture should be regarded as justifiable for purposes of diagnosis "when the physical signs are such as to render the presence of dilated heart improbable, and when the suspected effusion is obviously endangering the life of the patient." In the first case which Mr. Shore records, the diagnosis lay between (1) pericardial effusion; (2) dilated heart; (3) some

mediastinal growth, including abscess, lying partially in front of the heart; (4) a localized pleural effusion. By exclusion the diagnosis of pericardial effusion was made, and the puncture confirmed it, but the case, which was a desperate one, terminated fatally during the operation.

Dr. WEST presents *A Few Clinical Observations upon the Action of Pilocarpin.*

Mr. BULLER'S *Inquiry into Some of the Conditions of Abdominal Obstruction, leading to the Conclusion that Rupture of the Intestinal wall tends to take place in one place and in a certain manner*, contains an account of experiments made with large intestines from the post-mortem tables. Twenty-four observations were made, the results of which are contained in tabulated descriptions, and an excellent engraving of a portion of the large intestine, showing a rupture of a longitudinal band, is appended to the paper.

Dr. SHAW presents a paper on *Degradation of Type in the Insane;* and Dr. DAVIES adds to the slowly increasing literature of the subject the report of *A Case of Endemic Hæmaturia from the Cape of Good Hope.*

Dr. KIDD contributes the notes of a case of *Fecal Vomiting without Mechanical Obstruction of the Intestines.* The fecal character of the vomiting is attributed to an "œdematous infiltration of the ileum and the greater part of the jejunum, resulting in a paralytic stagnation of their contents—the peristaltic contractions of the duodenum and upper part of the jejunum ultimately leading to regurgitation into the stomach, there being less resistance in this than in the onward direction."

Dr. LAUDER BRUNTON and Dr. CASH furnish a note from the physiological laboratory, *Why do Medicines sometimes fail to Act?* illustrated by several tables and wood-cuts.

Mr. TOOTH'S paper, *A Case of Epilepsy, with Remarks*, calls attention to several points which were unusual in the case which he reports. One of these was the presence of involuntary micturition during a paroxysm, and the absence of tongue-biting. The former symptom the author regards as essentially an epileptic phenomenon as the latter, though less common, and adds that it is sometimes present when tongue-biting is not. He proposes this as an addition to our means for differential diagnosis in cases where it is difficult to distinguish epileptic from hysterical attacks.

An elaborate paper, *Studies of Microbes at the Biological Laboratory of the Health Exhibition* by THOMAS MOORE, and short contributions by Messrs. COMBES and CHRISTOPHERSON on *Transposition of the Aortic Arch*, and a long and interesting history of the *Hospital Pharmacopœia* by Dr. CHURCH, conclude the papers in this volume, which certainly has the merit of presenting a great variety of subjects to its readers.

A word of commendation of the Statistical Tables for 1883 must be added—they are excellent. R. P. R.

The first surgical paper of this volume is by Mr. JAS. BERRY, *On the Treatment of Cancerous Stricture of the Œsophagus by means of Railway Catheters and Soft India-rubber Tubes*, and is a most valuable contribution. As the measures of treatment he suggests, if they prove equally successful upon further trial, bid fair to do away with gastrostomy except in extreme cases, we shall devote considerable space to the consideration of this paper. The degree of originality in the measures suggested is difficult to determine, and is indeed hardly raised by the author. The

germ of the idea was contained in Krishaber's paper, in which he advocated the constant retention of a catheter in the œsophagus, and suggested the possibility that a certain degree of dilatation having been thus effected, ultimately a soft, flexible, rubber tube might be substituted. To Mr. Berry is due the credit of having demonstrated this possibility to be a fact, and simplified and rendered easy of accomplishment this apparently most difficult task. Owing to the corrosion which the catheters underwent, Mr. Croft—a firm advocate of dilatation—advised their change every fourth or fifth day. Mr. Berry points out that, owing to their rigidity, the gum-elastic catheter often gives rise to so much discomfort during the patient's movements as to necessitate its removal and a resort to gastrostomy; in addition, later on, the time will come when an instrument can no longer be passed; and, finally, the risk of perforation is not a theoretical one. To do away with these disadvantages formerly inherent to œsophageal catheterism the author advises "railroad catheters," *i. e.*, those with terminal openings which are introduced over a catgut guide, and when withdrawn the same guide is first introduced through the tube, which is then withdrawn, leaving the guide *in situ*, so that the introduction of the same or a larger instrument is readily accomplished, and the stricture is never without some dilating agent. As soon as a certain degree of patency is effected by the catheters, a soft, flexible tube, cut obliquely at its end, is introduced over the guide and allowed to remain for many days, until by its loose movements when drawn up and down it is clear that a larger one can be introduced. In the method of introducing the soft tubes we must refer our readers to the paper, since to make it clear would require a long explanation. The histories of three cases are fully given, most clearly demonstrating the advantages of the method.

The advantages claimed are, that food can be earlier administered in extreme cases than by gastrostomy, since it will pass by the side of the smallest instrument tied in, when none would before; the difficulty in getting through a cancerous stricture is not its calibre, but the irregularities, fissures, and pouchings which entangle the point of the instruments. Now these difficulties can be just as readily overcome by a small as a large instrument, and "whatever the size of the instrument that is first introduced, we may be sure of being able to replace it in a very short time" . . . . "by one large enough at any rate to allow of the introduction of food." The method, therefore, is especially applicable to strictures of narrow calibre in those who are otherwise condemned either to starvation or gastrostomy.

Strictures of moderate size can often be treated "by the periodical passage of a good-sized catheter;" but, if there is much difficulty in swallowing, which would tend to increase the sacculation of the gullet, food should be taken through the catheter. With a tighter stricture, or one where there exists great difficulty in passing an instrument, a temporary resort to continued dilatation, to be followed by periodical catheterism, is advised. Mr. Berry thinks that there are few if any cases in which perseverance will not enable the surgeon to pass a catgut bougie. "When any difficulty occurs in getting the point of the bougie to pass in the desired direction, I have sometimes succeeded in overcoming it by making the patient attempt to swallow a few drops of water, and by gently pushing the bougie onwards just as the water is being swallowed." In the same way, passing the instrument a short distance during each one of repeated attempts at swallowing, will sometimes enable the operator to hit the opening in the

stricture, when the œsophagus is much pouched. In the three cases reported the obstruction was high up in the œsophagus. Whether this method is equally applicable to carcinomatous strictures at the cardiac end of the œsophagus remains to be proved.

The Result in a Hundred Cases of Osteotomy, with remarks by ALFRED WILLETT, forms a most instructive paper, which is replete with points of interest, but which is hardly capable of much further condensation, so that we shall refer to but a few of the more striking statements. Although by far the greater number of cases have been operated upon by McEwen's supracondyloid plan, latterly Mr. Willett has resorted to Reeve's modification of Ogston's, or the intercondyloid method, and says that he must express the decided opinion he has formed, that in the more extreme cases McEwen's plan fails to produce a straight limb. He says that McEwen's operation "in his hands has proved a safe, simple, and certain operation in all ordinary cases of genu valgum or genu varum. That casualties have happened, and some of them even fatal, I am of course aware; but the only events among my own to narrate are, that in Case 17, a very tiny splinter of bone necrosed and came away," . . . . "and in Case 4, a considerable-sized piece of the chisel broke off and was left in the bone—a matter apparently of no moment," as "the after-progress gave no indication of anything unusual having occurred." Full Listerian precautions are invariably resorted to since Mr. Willett experienced deep suppuration in two cases after Adams's operation, death resulting in one. In Gants's, as well as in Adams's operation, the author resorts from preference to the saw by means of which he can make more sure of making section in the proper line. The limb should be put up in an *abducted* position to cause *lowering* of the pelvis upon that side, thus concealing some of the *real* shortening. In operating for curved tibia when dividing the bone in the lower fourth—the usual point—the bone is cut obliquely and the fragments are slipped past one another, this manœuvre, according to Mr. Willett, doing away with any risk of non-union, a possibility which, he says, must not be overlooked when operating upon rachitic cases. Many individual cases of great interest are included in the tables, or commented upon in the "Remarks," and the paper concludes with a "note" by Mr. D'Arcy Power, detailing the appearances presented upon dissection of a case which had been operated on for genu valgum nearly eighteen months previously. Any one interested in this subject should read Mr. Willett's paper in full.

Aural Polypi forms the subject of a short paper by A. E. CUMBERBATCH, wherein he shows that they are—as is well known to those conversant with aural practice—more amenable to proper treatment than the general practitioner is aware of. He shows that their most common origin is from the tympanic cavity; that they arise less frequently in the auditory meatus; and that their most infrequent site is the membrana tympani. His observations teach him that when springing from the mucous membrane of the tympanic cavity they generally arise from its posterior half, whilst those originating in the auditory meatus spring from the postero-superior wall, generally close to the membrana tympani. There is nothing peculiar in his treatment, his preferences being for the removal by forceps or snare of those polypi originating in the tympanic cavity which are large, and touching the spot from which they are removed with a saturated solution of chromic acid, while those projecting but slightly beyond the membrana tympani and those springing from the membrane itself had better be treated only by the chromic acid applications and lotions of boric acid ten grains to the

ounce of absolute alcohol, or equal parts of liq. plumbi subacetat. and absolute alcohol. Polypi of the meatus are to be removed and their bases treated as above.

Gastrostomy in Malignant Disease of the Œsophagus, by T. Whitehead Reid, Esq., really consists of a more extended history, with the final result, including the post-mortem examination, of a successful case of this operation reported in the *Lancet* for Nov. 3, 1883. The author maintains that "permanent catheterization is applicable to cases seen at a far earlier stage than those now under consideration." Bronchial symptoms contraindicate catheterization, as does, still more certainly, suspected or known ulceration. Beyond this there is nothing in the paper with which our readers are probably not familiar.

A paper entitled *Some Cases of Wounds of the Eye*, by Robert J. Collyers, contains a number of interesting cases in which conservative treatment was attempted with varying degrees of success or failure, but as this contribution consists only of brief histories of cases, this paper does not admit of a profitable abstract, since no general principles of treatment can be deduced.

The contribution of Jamieson B. Hurry, M.B., *On Gangrene of Uterine Fibroids followed by Expulsion*, like the preceding paper, chiefly consists of the detailed history of two cases, one of which recovered under the use of very large doses of ergot, while the other, at first doing well, died. In the latter case a small portion of the fibroid was cut off, soon after inflammation followed by gangrene set in, sloughing masses were mechanically removed, and recovery was progressing satisfactorily when at the end of five weeks the patient died of peritonitis and septicæmia.

Mr. W. J. Walsham contributes a thoughtful paper called *Notes from the Orthopædic Department, on the Treatment of Lateral Curvature of the Spine.* We cannot do better than give the conclusions at which Mr. Walsham has arrived, premising, however, that we cannot agree with him in his estimate of the plaster-of-Paris jacket, raw-hide supports, etc. No one who has had any experience in the treatment of such cases can doubt that entire dependence on any form of support will result in the evils the writer has called attention to, but still, a plaster-of-Paris jacket properly applied, frequently changed, or sawn so as to be capable of being sprung off and yet be accurately reapplied, *conjoined with* posture-methods and gymnastics, has proven in our hands the best method for the treatment of such cases among the poor. The mistake seems to prevail that a jacket of some kind or other once applied is the end of treatment; with us it is the beginning. Here is not the place to enter into an explanation of what we mean by the "properly applied" plaster jacket, but we may say that it is a modification of Mr. Reeves's plan. The author's conclusions are as follows:—

"1. That all slight cases should be treated by posture and exercises.

"2. That with these some form of bandage or shoulder brace may advantageously be combined.

"3. That the patient should be warned not to trust to either of the last as very efficient means of cure, but only look upon them as useful accessories to the treatment by posture and exercises.

"4. That pronounced cases should at first be treated by posture, exercises, bandages, etc., and only be placed in rigid supports if the former treatment from any cause cannot be thoroughly followed.

"5. That advanced or severe cases in which there is muscular debility may be benefited by posture, exercises, etc., inasmuch as the curves may be prevented

from increasing, whilst the general muscular strength is improved. But in such little or no improvement of the curves must be expected.

"6. That pronounced and advanced cases may be prevented from getting worse by plaster-of-Paris or felt cases, and may, under some circumstances, be slightly improved.

"7. That all forms of support have a tendency to produce muscular debility, and lead the patient to rely on them at the expense of the muscles of the back.

"8. That even with the use of supports the patient may under some circumstances get worse."

Upon the whole, with the reservations before given, we entirely concur in the author's conclusions.

Extensive Sarcoma of the Vertebræ, Sacrum, Ilium, and Sternum, by H. LEWIS JONES, M.D., is the next paper which we shall notice. All the vertebræ from the fourth dorsal or even higher were effected, besides the sacrum, both ilia, several ribs, and the sternum. The reporter remarks that secondary malignant disease of the vertebræ is usually carcinomatous, while most cases of primary trouble have proven, as his case did, to be sarcoma. Secondary growths seem specially prone to follow scirrhus of the breast. "In women who are or have been suffering from scirrhus of the breast, one should not disregard persistent complaint of pain in the back or legs, especially if there be emaciation as well; and if such symptoms are followed by paraplegia, the diagnosis is almost certain." In one case of Mr. Hawkins, the diseased breast had been removed six years before. The author further says, "The symptoms of cancer of the vertebræ are fairly uniform; first pains in some part of the body, usually in the lower limbs, followed by paraplegia, with pains or painful spasms in the paralyzed limbs." Charcot has described this condition under the name of painful paraplegia, saying that lumbar pains shooting down the legs, nearly constant, although worse at night, and which are subject to exacerbations, and affecting all the nervous ramifications, are the first symptoms. These are followed by a difficulty in walking, which soon amounts to paraplegia, but neither analgesia nor anæsthesia is detectable. According to Charcot, the sphincters are unaffected, but this is certainly not the rule, as, for instance, Mr. Jones's case. The reporter suggests that the site of the disease influences this symptom, and states that in all of Charcot's cases the lumbar spine was involved. Finally, Mr. Jones well says, "It is worth while to bear in mind that there may be, as in the present case, extensive disease of the bodies of many vertebræ, without tumor or prominence of vertebral spines, and angular curvature is as often absent as present." It is interesting to note that a continuous *high* temperature was recorded, which fell to the norm on improvement, to rise again when the pains recurred. This disproves the statement made by some authorities, that rapidly growing sarcomata may be distinguished from phlegmons, etc., by their non-febrile course.

Traumatic Cephalhydrocele forms the subject of a paper by Mr. THOMAS SMITH, in which he relates two supposed cases of this affection. In one death resulted, and a post-mortem examination revealed a large ragged opening through the bone, and no *certain* communication—although the registrar *thought* there was—with the arachnoid sac, much less with the cavity of one of the ventricles, as maintained by Mr. Lucas and Prof. Conner, and as is probably always the case. The post-mortem details by no means demonstrate to us the fact that this was a case such as Conner and Lucas have described, for the tumor contained serum, was bounded externally by the pericranium, and was limited on its deeper surface by the

dura mater, but no communication was *proved post-mortem with any of the serous cavities of the encephalon*. The history of the case is by no means conclusive, since with a bony opening of the size described an impulse would be communicated by the normal movements of the brain or in crying, while no mention is made of increased *tension* in the true sense of the word. The other case recovered, *i. e.*, did not die, but the swelling remained. In both instances Mr. Smith considers that the gap in the skull was far too large to have been produced by the injury, and was chiefly the result of absorption. Mr. Bowlby has suggested to Mr. Smith that this absorption was due "to injury to the growing centre of one of the cranial bones, an explanation that would account for the lesion's being confined to young children." Mr. Smith thinks that this affection may be not so uncommon as is generally taught, but that certain cases of unabsorbed cephalhæmatoma are really cephalhydroceles. He is also opposed to any operative interference, and in this opinion we concur.

A Note on the Cause of Pyrexia in Cases of Simple Fracture, and on the Influence of the Nervous System in the Production of Traumatic Fever by ANTHONY BOWLBY, is only another instance of the fact that surgical theories too often work in a circle, and that sooner or later minds of a certain type will become dissatisfied with prevailing theories, and will revert in preference to older ones, since there can hardly be said to be any *really* new ones. We do not intend analyzing in detail the present paper, but shall give some few points which the author holds to be facts. He does not deny that septic changes induce fever, nor the advantages of keeping wounds aseptic, but does maintain that there are other causes. He relates seventy consecutive cases of simple fracture, 8 children and 62 adults, in which temperature observations were made. Among the adults there were only 3 cases in which the temperature did not exceed 98.6° F. In 30 cases the average was 99.7°; in 20 it rose between 100° and 101°, the average being 100.2°; in 9 it was over 101°, the highest temperature being 103°, and the average 102°. The highest point was reached within the first forty-eight hours in almost all cases; in six only did it occur later. In children, strange to say, the least rise took place, the average being 99.2°. Mr. Bowlby says that this fever is really the fever following shock, the old "fever of reaction," and the tension due to extravasated blood is an additional cause. As a proof of the latter factor, he has seen the temperature rise to 102° after the too tight application of a splint to a deformed limb; this can only act, he thinks, through the nervous system. Pain is another element which the author has proved to be capable of raising the temperature from 2° to 3°. "Nevertheless, all pain does not cause pyrexia, but, on the other hand, when excessive, and more particularly when transmitted from organs in connection with the sympathetic trunk, it produces shock and depression of temperature," *i. e.*, renal and hepatic colic, etc. Other points are made in this paper which we cannot devote further space to discuss. If Mr. Bowlby's views are correct, it will certainly prove a great relief to the surgeon's mind to be able to see, in the fever following an operation or traumatism, no *necessarily* septic absorption. In our own observations, we have not found this constant rise of temperature in all cases of fracture, although we have looked for it. It is therefore premature to express an opinion as to the correctness of Mr. Bowlby's views until other observers have corroborated his observations. They are certainly ingenious, and deserving of careful thought and study.

In Mr. EDGAR W. WILLET'S communication, called *Cases from Mr. Savory's Ward*, three histories are given, the first being that of a case of fracture of the body of the sixth cervical vertebra, in which the patient survived until the eleventh day, and then the immediate cause of death was "pneumonia with pleuritic effusion."

The second case, one of recovery in a depressed cranial fracture where there were no compression symptoms, is not so unusual as to be specially worthy of record, if the *exact site of the depression is given*, since no motor or other disturbance was to be expected, unless due to secondary intracranial inflammation. In addition, the external table was considered to be the only one involved. The depression was at the anterior and lower part of a wound which was situated over the junction of the left parietal and temporal bones. This would certainly escape, according to Charcot and Pitres, Champonnière, etc., anything *perhaps* but the speech and facial centres, and from the description, the fracture ought to have been below these points. A case of intussusception twice reduced by the injection of warm milk, it seems to us—in view of other histories, post-mortem and ante-mortem—should read "almost completely" reduced at the first sitting, and completely at the second; recovery took place.

G. B. FERGUSON, M.D., describes and figures a *Mode of Cyst Formation in the Mammary Gland.* He considers that in his section "the exuberant gland tissue is caught, as it were, in the very act of forming cysts." It is rather difficult to render his explanation of the section clear without the cut, and we are not at all certain that many practical pathologists were not familiar with the appearances described, although it is true no writers have specifically described them; but, lest any injustice be done, we shall quote his own words:—

"Firstly, there is a cellular proliferation whereby an acinus is somewhat closely packed. There often ensues expansion of the acinus, with internal production of papillomatous cellular ingrowths, until the external wall condensing more and more, and the cells gradually restricting themselves to two or three layers on the internal wall (the remaining cells having probably coalesced to form the mucous contents), at last a perfect cyst is formed."

From the abstracts of the surgical papers of this volume which we have given, it will be admitted that while they are all of interest, but few of them seem likely to be of very permanent value. C. B. N.

ART. XXXIII.—*The Student's Guide to Medical Jurisprudence.* By JOHN ABERCROMBIE, M.D., Cantab. M.R.C.P., Lecturer on Forensic Medicine in the Charing Cross Hospital Medical School, etc. 12mo., pp. 387. Philadelphia: P. Blakiston, Son & Co., 1885.

THIS little volume is, we believe, the latest aspirant for professional favor in the domain of forensic medicine, a department that has within the last few years been unusually prolific in works of this character, intended more especially to claim the attention of the medical student to what should be regarded as a most important and indispensable branch of his studies, but which has hitherto been almost universally neglected in this country.

The present work is—if one may use the expression—a condensed epitome of the principles and facts of the great science of medical jurisprudence, including toxicology, all compressed within the limits of a small handy volume. The author, who is known as an excellent teacher and writer, tells us in his preface that "he lays but little claim to originality," but that his work "has been compiled for the use of students, at the suggestion of the publisher." We have looked pretty carefully over the volume, and can bear testimony to the fidelity and accuracy with which the compilation has been made from the various authorities cited. Indeed, it might be regarded as a *concentrated extract* of the works of these more voluminous writers. But the question presents itself: Can a science like forensic medicine possibly be acquired by the student in such a condensed form? To one already familiar with the science such epitomes may serve as valuable reminders on review; but we very much doubt whether they can take the place of the more elaborate treatises, whose minuter details are essential to the beginner, as explaining its fundamental facts and principles.

The chapters on the Signs of Death, Identity, Presumption of Death, Death from Cold, Heat, and Starvation, Death from the various forms of Asphyxia, and Causation of Wounds, Blood-stains, etc., are all admirable *condensations* on these important subjects; but in the last-mentioned one—that on Blood-stains—we have a forcible illustration of the evils of this system, pushed too far; for the author, when alluding to the most important of all the facts connected with blood-stains in a murder case,—namely, their identification as *human* blood-spots by means of the microscope—is forced to dismiss the whole subject with the single remark that "the colored corpuscles of man are larger than those of the domestic animals."

The chapters on Wounds in different parts of the body are fuller than some other portions of the book, and are well presented. The one on Insanity is necessarily very meagre. Those on Abortion, Infanticide, Pregnancy, Legitimacy, and Inheritance may be said to contain the gist of the matters treated of, and all their important facts well brought out, though, in our opinion, in a too highly concentrated form. This is especially true of the section on Rape.

The portion of the book allotted to Toxicology embraces nearly one-third of the volume; this fact shows the high estimate of this branch of the subject held by the author, in which we fully agree with him.

The description of the individual poisons in their toxicological relations is as full and accurate as the limits of the work will allow; but there is an entire omission of the mode of detecting them in the human body after death—which is, of course, the main duty of the toxicologist in criminal cases. The reason for this omission, as given by the author in his preface, is that "he has purposely avoided all mention of the search for them in organic compounds, partly because such knowledge can only be really acquired in the laboratory, and partly because in every-day practice analyses of this nature are invariably conducted by an analyst who has devoted special attention to this particular subject." Again, the reader is directed in various places, under the head of *tests*, "to consult works on chemistry for the necessary information." Query: Might not the whole subject of toxicology have been, with equal propriety, referred to treatises on this subject?

In our review of the work, we may not omit to notice a few inaccuracies

which no doubt escaped the author's attention. Among the tests for strong sulphuric acid, its action on mercury and copper is stated to evolve sulphurous acid; but the necessity of applying heat for this reaction is omitted. Oxalic acid is described (pp. 210, 211) as having a *bitter* taste. The fatal dose of tartar emetic for an adult is rather loosely stated (p. 229) to be *two grains*, without mention of the fact (recorded by Taylor) that the individual so affected was in enfeebled health. As is well known, in the great majority of cases, a very much larger dose of this substance is required to destroy life. In describing Reinsch's test for this same poison (p. 230) there is an inaccuracy in the statement that "the deposit on the copper is more sooty than in the case of arsenic." In the mention of the iron-test for prussic acid (p. 294), the *ferrous* sulphate alone is given, along with a little potash and hydrochloric acid; whereas a mixture of the *ferric* and ferrous sulphates is much more successful in producing the characteristic Prussian blue.

Under the head of aconite, the author gives an excellent, though succinct description of the *physiological* tests (indeed the only available ones) employed by Drs. Stevenson and Dupré in the late Lamson case in England.

In conclusion, we can commend this little manual (with the reservations above mentioned) as a well-written and faithful exponent of the branch of science that it has undertaken to expound. J. J. R.

ART. XXXIV.—*Manual of the Antiseptic Treatment of Wounds. For Students and Practitioners.* By W. WATSON CHEYNE, M.B., F.R.C.S., Assistant Surgeon to King's College Hospital, Surgeon to the Paddington Green Children's Hospital, etc., with illustrations. Small 8vo., pp. 151. New York: J. H. Vail & Co., 1885.

MR. CHEYNE, in his preface, points out that in the introductory chapters he has treated of matters which were not ripe for discussion when his work on Antiseptic Surgery was written, so that together they will furnish the reader with as complete a view of the subject as is possible at the present time. We will go a step further, and say that the author has done his work so admirably in the book under review, that few need desire a more satisfactory account of the antiseptic treatment of wounds than is contained in its pages.

It is by no means only a treatise upon the antiseptic method, but in the way of elucidation and illustration of his subject the author has given his readers a most clear and interesting chapter on the repair and dangers of wounds. Within a small compass he has clearly compressed all that is taught upon this subject in the chief surgical text-books. He also quotes and explains Tillmanns's experiments upon the so-called organization of blood-clot. He contends that this process is the same for an open aseptic wound as for subcutaneous clots. In the latter the clot becomes infiltrated with young cells which develop into fibrous tissue, the original blood-clot becoming absorbed and ultimately also much of the newly-formed material. The essential for this absorption is a non-irritating condition of the clot. We have given this special explanation of the so-

called organization of blood-clot, for, like the similar organization of the animal ligature, even those who ought to be better informed seem unacquainted with what is meant by the phrase. In reality both clot and ligature act precisely as the sponge-graft does, *i. e.*, as a scaffolding whereby the young infiltrating cells may be built up into masses, and so retained for such a length of time as may suffice for their organization into young connective tissue. In neither case does the blood-clot or ligature take any active part. We have ourselves undoubtedly seen this process taking place in an open aseptic wound.

Chapter II. is devoted to a concise, yet admirable *résumé* of what it is desirable to know concerning "Bacteria and Disease" as far as wounds go. For the information of those of our readers to whom works on bacteriology may not be readily accessible, we shall enter somewhat into detail as regards the facts given by the author. There are four classes of organisms, viz.: micrococci, or round bodies; bacteria, small, oval, rod-shaped bodies, about twice as long as broad; bacilli, rods of various lengths; and spirochaetæ, or spiral filaments. Some are always motionless, some move for a time and then become stationary, when they frequently collect in masses by mutual adhesion, forming zoogloœa. Motion, as a rule, seems in proportion to the amount of oxygen present. Growth is always by division, although spore-formation may be superadded. Bacilli divide transversely to their long axis, while micrococci may divide longitudinally as well, forming triplets or series of four. Growth is rapid, but its rate is dependent upon the nature of the soil and the degree of temperature and moisture. Spore-formation has only been observed for the bacilli, and seems to occur when their food is nearly exhausted; this process providing for the future existence of these organisms. Spores are endowed with wonderful vitality, which they retain for years, even in the dry state. They are very resistant to chemicals and heat; infinitely more so than the adult forms. Micro-organisms are present in large numbers in dust, in water, and on all objects, while the air, by gravity, etc., although containing some, may be comparatively free; therefore the introduction of any minute material object into a sterilized organic fluid, or into wound-fluids, is certain at the same time to introduce a number of micro-organisms. Different soils suit different organisms. "The substances essential for their nourishment are water, phosphates, salts of potash, carbonaceous and nitrogenous organic substances." A neutral or slightly alkaline reaction of the medium is best for most bacteria, though not for all. The majority require, or grow best, in free oxygen, although for some species it must be almost if not entirely absent. Extensive alterations result in the materials in which they grow, *i. e.*, they break up the complex organic substances, reducing them to simpler forms, and some of their products resemble, in their effects, certain of the alkaloids, producing toxic symptoms when introduced into the animal circulation.

There are two classes of organisms producing "infective diseases," only one of which requires an open wound; with this latter class we are alone at present interested. Those micro-organisms which cause such alterations in the organic fluids as result in the product of a poisonous alkaloid are the cause of what is known as "septic intoxication." The symptoms are not due to multiplication of bacteria, but to the alkaloidal poison, since the destruction of the micro-organisms does not perceptibly diminish the effect of solutions containing this ptomaine. In small doses, or

repeated small doses, death does not result, *i. e.*, only traumatic fever occurs. Where a large surface for absorption exists, and where large, or frequently repeated small doses are absorbed, or where the patient's excretory organs, as the kidneys in Bright's disease, fail to do their duty, death will often result. A healthy, granulating surface seems a complete barrier to the absorption of this substance, which has been obtained in a crystalline form by Bergmann. The same bacteria cause local inflammation and suppuration, although these results may follow from other irritants, such as strong solutions of antiseptics, etc. Only certain micro-organisms —chiefly micrococci—can grow in the living tissues and cause suppuration, while others multiply in the discharges alone, producing irritating products which set up pus-formation. The causes of suppuration in a wound may then be said to be: 1. Decomposition of the wound discharges. 2. The presence in the wound of various chemical irritants, perhaps certain antiseptics themselves. 3. Tension from retention of discharge, especially when undergoing fermentation. 4. Multiplication of micro-organisms in the surface-tissues of the wound. Some micrococci cause inflammation without previous injury or wound, such as those which produce the spreading abscess of rabbits; while others—as those of osteomyelitis—although present in large quantities, cannot cause the disease unless some traumatism be superadded.

The evidence is accumulating, so that there can be little doubt, that the *acute* spreading gangrene and phagedæna of man are due to the same streptococci, which, when inoculated on mice, always produce this disease. Of course other causes of gangrene exist, but Mr. Cheyne seems to prove that even in senile gangrene the *spread* of the disease is chiefly due to the inflammation set up by the presence of micro-organisms in the discharge, or by tension, which the weakened tissues cannot withstand. If this be true, with aseptic precautions he thinks that we may disregard the old rule about not amputating for senile gangrene. Gangrene after operations on wounds is, according to the author, due to: 1. The direct destruction of tissue, injury of bloodvessels, etc. 2. To inflammation of feeble tissues, when it results from the growth of micro-organisms in the tissues or discharges, or there is simple tension. 3. To the effects of multiplication of certain bacteria in the tissues, as in the spreading gangrene of mice. Erysipelas has been produced by one observer alone (Fehleisen) in seven cases by the inoculation of the pure micrococci of this disease.

Pyæmia—certainly in rabbits, probably in man—has been proved to be due to the growth of micrococci in the blood, where they aggregate, and, either locally or by a process of embolism, cause the disseminated abscesses of this disease.

"Septicæmia is a much more complicated affection, and probably arises under several circumstances. Continued absorption of the poisonous material from wounds referred to under the head of septic intoxication will keep up a feverish state, with all the symptoms of septicæmia, and if long continued may terminate fatally. In other cases the micrococci grow in the tissues of the wound, and pour their products or ptomaines, as they are called, into the blood. Here micrococci may be found in the blood, but the essential seat of the disease is the tissues. In a third form micrococci grow in the blood, and multiplying there give rise to the symptoms. In a fourth form organisms grow in the blood, but they belong to the class of bacilli. The last two cases correspond to what is found in the lower animals (mice, rabbits, etc.). In them septicæmia is caused by more than one organism growing in the blood, and giving rise to symptoms and post-mortem appearances which can only be classed together as septicæmia."

Chapter III. is devoted to the consideration of the "Destruction of Bacteria," and there are certain points which it behooves us carefully to consider. Mr. Cheyne shows that the earlier experiments are unreliable, and none but those conducted as Koch has done should be considered as decisive, owing to the resisting power of spores and the different viabilities of the various micro-organisms. From Koch's experiments it was shown that the spores of bacillus anthracis required immersion in a 5 per cent. solution of carbolic acid for twenty-four hours to destroy them, and even then one or two grew; while the adult bacilli were killed by immersion for *two minutes* in a *one* per cent. solution of the same antiseptic. In addition an amount of an antiseptic which will not *destroy* a micro-organism may hinder its *development;* in many cases this practically amounts to the same thing. Thus, $\frac{1}{850}$ to $\frac{1}{1250}$ part of carbolic acid prevented the growth of bacillus anthracis in meat infusion containing peptone. The action of the vapor of this acid at the ordinary temperature for forty-five days did not destroy the spores of earth bacilli, while the same exposed at a temperature of 55° C. for an hour and a half only developed a few colonies; at 75° C. for two to three hours all growth was completely arrested. The menstruum is important; thus 5 per cent. carbolic acid (the fatal dose when in water) in oil did not affect the spores of bacillus anthracis after 110 days. The bearings of these facts are too manifest to need dilating upon, while further illustrations would be superfluous. The author hazards the suggestion that the differences between the practical and experimental results found in the use of carbolized oil are probably owing to the fact that the fluids of the wound abstract the acid from the oil, and thus the antiseptic acts in a watery solution.

Interesting and instructive details are given as to the power of the various disinfectants in killing the spores of bacillus anthracis. There is evidently an error as to boracic acid, which is said to kill them in 5 per cent. solution within 24 hours in one place, and in another a saturated solution is stated to only delay vegetation after six days. A few more facts as to the destruction of micro-organisms, and we have done. As Koch's experiments were performed on pure cultures without extraneous substances it does not follow for instance that in *practice* similar results will be obtained. Thus $\frac{1}{1000}$ part of mercuric bichloride will not destroy the tubercle bacillus in *sputum* even after 24 hours' action, while a 5 per cent. watery solution of carbolic acid will effect this result in the same time; yet on dry spores the result is reversed. Many other interesting points will be found on reference to the full text.

Next follow several chapters on aseptic surgery, which is declared to be the "*exclusion* of active ferments from the discharges of wounds," while antiseptic surgery is their destruction after having *gained access* to the wound-fluids. This subject has been so thoroughly gone over in previous reviews in this JOURNAL that only a few points which are new, or from being constantly overlooked need iteration and reiteration, will be touched upon. Thus the addition of either alcohol or glycerine to render carbolic acid more soluble in water, lessens its power, since these substances hold the acid more tenaciously than water.

The failure to render effective capillary drainage by absorbable drains is shown to be due to three errors: the first is that the drain is not secured to the bottom of the wound; the second, that the threads are not brought out in a number of bundles, each of not more than 5–6 threads,

but usually in a single bunch; and third, that the individual bundles of catgut are apt to be broken up outside the wound, "for the capillary action occurs in the intervals between the threads when they are closely apposed." Finally, such drains will *not* do for anything but blood or *serous* discharges. Numerous illustrations and descriptions are given of the most effectual methods of retaining the edges of the antiseptic dressings in contact with body surfaces, the neglect of which is a most fruitful source of failure in this method. Speaking of wounds of the abdomen with protrusion of omentum where the latter is very dirty or difficult of return, the author advises resort to Dr. Kenneth McLeod's plan of "stitching the deepest part of the omentum to the deep part of the wound, cutting off the remainder and closing the skin over all."

When adverting to Mr. J. Hutchinson's successful treatment of wounds he shows that Wilhelm Hack has proved that carbolic acid applied directly to *granulations* so modifies their power of preventing absorption that they act almost like recent wounds, thus showing the inadvisability of using this substance except aseptically, *i. e.*, not in direct contact with the wound; and that pure alcohol, applied to granulations for a time, in great part or entirely prevents absorption through them. Mr. Cheyne says, "The favorable results of constant irrigation, especially when antiseptic fluids are employed, in preventing septic diseases are very remarkable, and, in this respect, it probably stands next to strict aseptic treatment." We can fully endorse this statement.

"The method of treatment which has been the greatest stumbling-block in the way of the acceptance of the principles of antiseptic surgery is the open method, for surgeons could not see how the success of this method could be reconciled with the germ-theory of putrefaction." In brief, without demonstrating in detail the truth of the author's propositions (which we did elsewhere years ago), the good results of the open method are due to perfect rest, free drainage, and concentration of the fluids and their admixture with oxygen; the former renders them unfit soil for the growth of bacteria, while by means of the latter those organisms which do grow get their oxygen from the atmosphere, and do not break up organic compounds, thus avoiding the formation of ptomaines. In addition, oxygen, according to Pasteur, is actually destructive to the bacteria of putrefaction. It will be observed in conclusion that we have merely stated the author's views, and have not indulged in much comment thereon. This is simply because we thoroughly agree with the writer upon almost every point, and this after extensive experience with most, if not all, of the methods he describes. It is a most valuable book, and those who do not care to go to the expense of his larger work cannot do better than to purchase this little treatise.

C. B. N.

ART. XXXV.—*Vorträge aus dem gesammtgebeite der Augenheilkunde.* Von Dr. LUDWIG MAUTHNER, k.k., Prof. in Wien. 12te Heft. *Die ursächlichen Momente der Augenmuskellähmungen: die Nuclearlähmung. Wiesbaden*, 1885.

The Causal Conditions of Muscular Paralysis of the Eye: Nuclear Paralysis. By Prof. L. MAUTHNER.

THIS part of Prof. Mauthner's important and comprehensive work on general ophthalmology is of interest, not only to the practising ophthal-

mologist, who will find in it the fullest consideration of the subject to be found in ophthalmic literature, but also to the physician who has to deal with nervous affections in their various forms and phases, for the whole of the instalment before us is given up to the study of the central causes of muscular paralysis of the eye.

Preceding, however, an investigation of these causes, there is a very short but sufficiently clear exposition of the function of the six external and the two internal muscles of the eye, and of the methods by which a paralysis of each and all may be diagnosticated. These methods are well known to all ophthalmic surgeons, and are to be found in all treatises on the eye. Their further consideration here is therefore unnecessary.

The cranial nerves that supply the eye muscles are the 3d, 4th, and 6th pairs, and it is readily understood that an affection of any one would lead to impairment in the function of the corresponding muscle or muscles. Pressure on the 6th nerve, for example, should cause paralysis of the abducens; on the 4th, the trochlearis; while, if it be on the 3d, all the remaining six muscles together with the elevator of the lid will be affected. Clinically, however, we do not find paralysis distributed in keeping with this arrangement, and it is this fact which lies at the foundation of the brochure before us. As the 4th and 6th nerves supply a single muscle each, their paralysis can affect only their respective muscles; but it is otherwise with the 3d, which supplies four of the external and the two internal (recti sup. inf. and int.; oblique inf.; iris, and muscle of accommodation). We find in practice that any one of these muscles may be affected, the others remaining intact, or that any number short of the whole may be implicated. To explain this phenomenon is the attempt of Prof. Mauthner in his idea of a "nuclear paralysis."

Recently there has been an attempt to divide ophthalmoplegia into two general heads of "external" and "internal." For certain purposes it is a useful classification, but Mauthner very properly suggests that these forms of ophthalmoplegia can be, for etymological reasons, more properly called "interior" and "exterior." A further subdivision is into "perfecta" and "imperfecta;" and also one into "unilateralis" and "bilateralis."

Coming now to study the aspects of muscular paralysis as clinically presented we find: 1. That we may have all the exterior muscles affected, the interior remaining intact. 2. Any one or more of the external muscles may be affected. 3. The interior muscles may be affected alone. 4. Either of the interior muscles may be affected alone. In support of this proposition Mauthner gives often in great detail the clinical histories of cases gathered from the literature on the subject from the time of Gräfe down to the present. These clinical facts can only be accounted for, in the opinion of the author, by the existence of a separate centre for the nerve-fibres going to each muscle. And it is but fair to state that experimentation on the cerebral functions conducted by Hansen and Völkers and others lends strong support to this view.

There are, however, other forms of paralysis than the nuclear. Excluding the causes operating in the orbit, we have the cerebral and basal: the former embracing those cases having their seat in the brain itself; the latter those to be found operating on the nerve somewhere in its course along the base of the skull. The cerebral forms include: 1, the cortical, in which the cortical gray substance concerned in the movements of the eyes is affected; 2, the nuclear, in which the seat of trouble is that collection of nerve-cells lying in the gray hollow of the 3d ventricle, the

aqueductus Sylvii and the 4th ventricle; 3, the fascicular, where the fibres which connect the cortical substance with this collection of cells is impressed. It is the opinion of the author that these cells in the 3d and 4th ventricles are the centres of affection in most cases of central paralysis of the eye-muscles, and the fact that there is isolated paralysis of a single muscle or groups of muscles must be accounted for on the supposition of a separate centre for each. A scheme of arrangement of such centres was proposed by Hansen and Völkers, but to the author's mind it is not so satisfactory, in view of the observed facts, as that of Kahler and Pick. Going from before backward their arrangement is:—

1. Muscle of Accommodation.
2. Sphincter Iridis.

Medial.
3. Rectus internus.
4. Rectus inferior.

Lateral.
5. Levator palp. sup.
6. Rectus superior.
7. Obliques inferior.

Trochlearis.

The reason for the acceptance of this plan is that it coincides quite accurately with the order in which the muscles are affected in progressive paralysis, in which case it is supposed that the morbific cause affects the centres successively, and clinical evidence is brought in support of the proposition.

The author discards entirely Hutchinson's idea of an involvement of the lenticular ganglion within the orbit as a cause of a paralysis of the interior eye-muscles. In such cases, by no means rare, it is supposed that centres 1 and 2 of Kahler and Pick are affected. Moreover, from a careful study of the clinical histories of the reported cases, the author is convinced that there is no associated nuclear paralysis, as is thought to be the case by some, and that there is no crossing of the fibres to the cell-centres of the opposite side; that, in other words, the nerves for the muscle of each eye have their centres on the same side.

The causes of nuclear affection are various, and may be primary or secondary; among them may be noted ependymitis with secondary affection of the gray arches, restiform or multiple sclerosis, and all those affections which lead to atrophy of ganglion-cells. Unquestionably hemorrhage into the ventricles has produced the paralysis in several reported instances. Syphilis is in some cases a remote cause. Of treatment the author will speak after he has considered the other forms and varieties of eye-muscle paralysis. S. M. B.

ART. XXXVI.—*Operative Surgery in the Calcutta Medical College Hospital: Statistics, Cases, and Comments.* By KENNETH MCLEOD, A.M., M.D., F.R.C.S.E., Fellow of the University of Calcutta; Surgeon-Major Indian Medical Service; Professor of Surgery Calcutta Medical College; and First Surgeon College Hospital. 8vo., pp. 340. London: J. & A. Churchill, 1885.

FROM its very nature, consisting as it does of the abstracted histories of a large number of carefully observed cases, this book cannot fail to be of

permanent value. Nevertheless, it does not admit of anything like an analytical review. Being founded upon the after-practice of the same hospital from which Sir Joseph Fayrer drew the chief materials for his well-known works, *Clinical Surgery in India*, and *Clinical and Pathological Observations in India*, Dr. McLeod's work is of special interest, as it affords us an opportunity of contrasting the results of the older methods of treatment with strict Listerism.

As the author points out in his preface, surgical statistics are only too apt to be misleading, as being "the outcome of work by different men under different circumstances and according to different methods." Successes and striking cases are apt to be reported, while failures and commonplace cases are disregarded. Again, the operator may have acquired a special dexterity in the performance of certain operations, or, guided by sad experience, has so carefully selected his cases that others more inexperienced cannot but fall short of his measure of success. Dr. McLeod has accordingly given us the results of all his operations for five years, with sufficient details of each to enable the most careless reader to ascertain for himself the correctness of the author's inferences.

Among the numerous good points of this book, we would call special attention to the marginal notes, which enable the reader at a glance to ascertain the whereabouts of any special fact that he is in search of.

In Chapter II. careful explanations are given of the "conditions affecting the success of surgical treatment in the Medical College Hospital," which clearly prove that an average of mortality which would be appalling in a European city is rightly a matter of complacency in Calcutta. "The insalubrity of the hospital, and especially its surroundings, have been much improved by the changes inaugurated by the efforts of Dr. Fayrer and his colleagues," and Dr. McLeod, with commendable fairness, says that the decreased mortality is sensibly due to to these changes, although improved methods of wound-dressing deserve their share of praise. It is but fair to state that, both during the pre-antiseptic and antiseptic periods, a large proportion of the fatal septic cases have been "admitted with the disease"—erysipelas, septicæmia, or pyæmia—"fully developed." The author shows that the belief that native Indians are remarkably tolerant of severe operations is, like all positive rules, one that requires a most careful statement of the exceptions. The belief is a warrantable one for the "up-country" rustic native, not for the ill-fed, ill-housed, malaria and syphilis-stricken, opium or hemp-consuming inhabitants of Calcutta and its environs.

Chapter III. consists of statistical tables of eight hundred operations, with comments thereon. Each succeeding chapter is devoted to the consideration of some one class or a series of cognate classes of cases. In the fifth chapter, which deals with operations upon arteries, the author, when relating the history of a case of popliteal aneurism, points out the interesting fact that aneurism, other than traumatic, is almost unknown among the native Indians, and that this is not his individual experience, but that of other surgeons. The chapter on injuries, diseases, and excisions of joints contains numerous cases of interest, into the details of which we cannot enter, but there are special general points worthy of comment. Thus, although syphilis is so rife, and often so maltreated in India, the joints commonly escape, together with the osseous and vascular systems. Again, periarthritis, resulting in destructive articular changes, is not uncommon after smallpox. Still more interesting is it

to note that strumous disease of joints "is extremely rare among natives." *Brisement forcé* is the favorite treatment for stiff-joints, and, doubtless owing to the absence of strumous tendencies among the natives, seems to be a much more successful practice than with us. Antiseptic incision into suppurating joints is highly extolled, and, judging from the results, with reason.

Two cases of wire-suturing of the patella are reported, one of which was eminently successful, and accompanied by no evil consequences. The other, owing to the supervention of carbolic-acid poisoning, had to be dressed with boracic acid; the joint suppurated, and, although recovery ensued, "a lame, stiff joint" resulted. In both cases the wires were removed, not turned down, their points hammered into the bone, and left, as seems to us the better practice, *provided* any wiring at all be done. We can conceive of circumstances under which we might be induced to wire a broken patella, but they are so peculiar that we question whether they can ever arise.

A long chapter is devoted to amputations, which number 61 with 16 deaths; 38 of these cases were for accident, the remainder were performed for the removal of disease. We shall call special attention to but two cases, viz., one of amputation of the upper extremity for sarcoma, where everything was removed except the inner half of the clavicle; death from shock took place in one hour after the completion of the operation. The second case is certainly one of excessive rarity, and resulted fatally from shock five hours after the completion of the operation. We certainly never remember having read of a similar operation, although such may perhaps be upon record. The removal of an immense soft sarcoma of the left hip of rapid growth was attempted by amputation at the hip-joint, but in order to extirpate the growth, "the whole of the ischium and the greater part of the ilium and pubis" had to be removed by "the chisel, hammer, gouge, and bone-forceps." But little blood is said to have been lost. In both instances the lungs were found involved, so that we agree with Dr. McLeod when he says that in such cases as occur so commonly in Bengal, and of which these seemed to be types, "the propriety of operation is more than doubtful," unless the disease involves parts less important than the scapula or pelvis, and is seen in its earlier stages. This chapter concludes with a comparison of results between the author's series and those of Sir Joseph Fayrer, the two series being separated by a space of ten years. The class of patients, rules of admission, etc., being similar, any improvement must be due—first, to improved sanitation; and, second, to methods of dressing. Sir Joseph Fayrer's mortality was 66.6, while that of Dr. McLeod's was only 31.9. The former series deals with a larger number of cases, and extends over a longer period, so that, together with the improved hygiene, etc., of the hospital during the period included in this work, the facts do not prove that much has been effected by the methods of dressing. We do not doubt that antiseptic dressings had much to do with the improvement recorded, but we cannot see that the fact is proved by the figures, although an examination of the causes of death shows an entire absence of pyæmia, septicæmia, osteomyelitis, etc. On the other hand, "exhaustion" is credited with 20 per cent. of deaths. We have always looked upon this term as a possible cover for either unsuspected or excluded septic troubles. As before said, even a mortality of 31.9 per cent. is appalling to our more favored eyes, but, considering all the circumstances, is rightly a source of congratulation to Dr. McLeod.

The author mentions in his ninth chapter, when speaking of malignant tumors, that he had resorted once to the temporary ligature of the axillary vein when removing a growth, this expedient proving beneficial only, no evil result following. Dr. McLeod removed the larynx twice for epithelioma; once with complete success, although the patient died five months and a half after the operation from pulmonary phthisis, while the second patient perished from venous hemorrhage on the fifth day.

The chapter (tenth) treating of non-malignant tumors is of special interest, since 129 of these were elephantiasis of the scrotum, among which only 23 deaths occurred; a small proportion when the details of the cases are examined. The heaviest tumor weighed 96 pounds, and the operation proved fatal from diarrhœa, vomiting, and exhaustion. All those interested in this subject should read Dr. McLeod's comments on his cases, which contain many practical hints as to operating, and much scientific information. He calls special attention to the fact that the experience in India shows Dr. G. A. Turner's advice to be unwise to save perineal skin when in the slightest degree infiltrated, since recurrence is then certain. Of the two forms of scrotal elephantiasis, the ordinary more or less solid tumor and the "lymph scrotum," only the latter seems to be associated with the presence of filariæ. Syphilis, alleged so often to stand in a causative relation to elephantiasis, especially by Dr. Allan Webb, is thought by Dr. McLeod to be efficient, if at all, by the local irritation of the sore, and more probably still, by blocking of the lymph-current, the result of hyperplasia, inflammation, and destruction of the inguinal lymphatic glands. The reader is referred to the work for directions as to restraining hemorrhage, and dealing with the testes, and for special methods of operating, which seem to us of great value.

Among the cases of benign growths was an "immense outgrowth or aneurism of the axillary vein" which was successfully removed, the wounded vessel being secured by catgut ligatures. A successful removal of a large bronchocele is also detailed.

Owing to the infrequency of stone in Calcutta only 30 cases are recorded; 3 being urethral; 19 vesical, for which lithotomy was performed with 3 deaths; while the remaining 8 were lithotritized, the only fatal result following rapid lithotrity, *i. e.*, Bigelow's litholapaxy. From the number of cases, 64 with 12 deaths, hernia seems to be a very common affection in Calcutta. 45 of the operations with 3 deaths were for the radical cure of the herniæ. Of this number 17 were operated upon by Wood's method with only one death, but a number of failures occurred. From this latter circumstance Dr. McLeod was led to adopt the antiseptic ligature and removal of the sac, with suture of the pillars of the ring with strong catgut. By this method he reports a number of gratifying successes, and gives two plates of the appearances presented by the careful dissection of one of his successful cases that died seven and a half months after the operation. Perineal section seems to be a favorite operation with the author, having been done in 28 cases.

Owing to the special tendency of the natives of Bengal to suppurative inflammation, serious abscesses involving danger to life are common: thus, 129 cases with 14 deaths are recorded. As far as possible they were all treated antiseptically, with results which the author assures us were most gratifying.

A certain number of cases of plastic surgery are reported, but form a small and unimportant percentage of the total. Nerve-stretching was resorted to in 6 cases, with one death from the original disease, *i. e.*, tetanus.

Three cases of anæsthetic leprosy, involving the distribution of the musculo-spinal nerve (one), and the ulnar nerve (two), were treated, with sufficient success to warrant a repetition of the operation, by "nerve-splitting." Neurologists would do well to study the history of these cases, and the comments of the author thereon, as they afford food for profitable rumination.

Death-rates and causes of mortality, hospitalism and antiseptics, with four instructive appendices, complete this interesting volume, which, certainly in its province, is a valuable contribution to surgical science.

C. B. N.

ART. XXXVII.—*A System of Practical Medicine by American Authors.* Edited by WILLIAM PEPPER, M.D., LL.D., assisted by LOUIS STARR, M.D. Volume I, *Pathology and General Diseases.* 8vo., pp. 1091. Philadelphia: Lea Brothers & Co., 1885.

L'appétit vient en mangeant! Not satisfied with the seventeen volumes of Ziemssen, or with the smaller reprint of Reynolds's System, the profession calls eagerly for more, and kind friends are at hand to gratify their slightest wish.

The relation of publishers to the medical literature of the country is of course intimate, and, in certain respects, curious enough. They watch the market closely, and know well just what wares are in demand, and are careful to see that the supply is equal to the occasion. While no one could wish to detract in the slightest from the great services which the large publishing-houses have rendered to the profession, a review of a list of medical works issued during the past twenty-five years raises a question whether the highest interests have always been served by these publications. The reprints with which the trade has been deluged have acted most detrimentally to the native author who has had to enter into competition in a market stocked to repletion with low-priced foreign works. That the local productions have in so many instances thriven speaks well for their vigor. In another way the medical publishers have hindered the development of medical literature in this country. In scores of instances they have made literary hacks of men, fit to do good and enduring work, by seducing them into editing English works "with additions and corrections," a style of labor above which very few have subsequently been able to rise. That we have entered upon a happier period for the native writer, the publication of this work is a most satisfactory proof. It marks, indeed, an epoch in the history of American medical literature. No such comprehensive work has hitherto been attempted, and for books of the kind we have been entirely dependent upon foreign sources.

In scope and character the work resembles Reynolds's *System of Medicine*, and embraces the entire field of medicine, including the specialties. The classification and nomenclature are those recommended by the Royal College of Physicians of London and the American Medical Association. The editor has been most fortunate in his staff of collaborators, and with but few exceptions the names of the authors of the articles in these volumes are well known to the profession, and recognized authorities on the subjects upon which they have written.

The first section, on *General Morbid Processes*, from the pen of Prof. Fitz, of Harvard, illustrates how thoroughly the German "*geist*" possesses the younger generation of our teachers. Twenty-five years ago, French and English modes of thought and studies ruled, or at any rate prevailed, among us, but since about 1860 scores of men have annually returned to their homes from Europe, having drunk deeply at Teutonic, and but lightly at Gallic and Anglican springs. The effect of this is very apparent in our journal literature, and is peculiarly shown in this article by Dr. Fitz, in which there is but one reference to a French author, and not one to an English work. While in certain respects this almost servile adhesion to German methods and thought has been in the highest degree beneficial, particularly in the various specialities, in others it has acted injuriously, and too many of the younger men have little personal knowledge of, and less sympathy with, English and French medicine. However, in an article on *General Pathology*, if anywhere, we can forgive an author for drawing almost exclusively on German sources, for from the laboratories beyond the Rhine have come the important modern contributions in this department.

The subject of inflammation is treated in a clear and comprehensive manner, and useless discussions on doubtful points are avoided. There seems a lull just at present in the strife over the histological details of the process, but the question of fever is being actively studied. The consideration of thrombosis and embolism leaves nothing to be desired unless it be illustrative figures which would have been useful in explanation of the text. The degenerations receive full measure in twenty-two pages. The subject of tuberculosis is naturally one to which we turn anxiously to ascertain our author's views. A brief but sufficient sketch of the growth of opinions precedes the consideration of the infective nature of the disease. The evidence which shows that the production of tuberculosis is dependent on the presence of bacilli which are to be regarded as the virus is thought satisfactory—a conclusion which the great majority of working pathologists have accepted. Scrofula and tuberculosis are considered to be distinct until further evidence of their identity is forthcoming. "The scrofulous person is frequently tuberculous, the tuberculous person is usually scrofulous; the non-scrofulous person may, however, die of tuberculosis, while the individual may be scrofulous without containing tubercle."

On the question of morbid growths the author takes safe ground in admitting that certain tumors are due to congenital peculiarities of tissue and even represent atypical growths from embryonal tissue, but the theory of such an embryonal origin for all tumors seems unnecessary. The influence of traumatic irritation in occasional instances cannot be denied.

If in this article of Dr. Fitz we must feel a little disappointed in such close adhesion to his German masters, and perhaps in a too-marked obliteration of his personality, we can at any rate congratulate him on a concise and clearly expressed statement of the subject, one to which many will turn for reference and information.

General Etiology, Medical Diagnosis, and Prognosis, by Dr. Henry Hartshorne, present a fairly satisfactory statement of the points usually considered under these headings. The germ-theory is discussed at length, but not in a very critical manner. The fundamental facts relating to cultures in series are not mentioned, and the author has evidently not grasped this part of his subject in the spirit of modern inquiry.

Dr. John S. Billings deals with the subject of *Hygiene* in connection with the duties of the general practitioner. The causes of disease, the

means of discovery and prevention are first considered in a series of practical sections full of knowledge of a most useful kind. Thus under *Habitations* a surprising amount of information is conveyed in a few pages, and the various points on which the family physician is usually consulted are given without unnecessary technical details. The principles of isolation and disinfection are discussed in that practical and lucid manner which characterizes all of Dr. Billings's writings on sanitary matters. Under personal hygiene, a timely warning is given to physicians in regard to the preservation of their own health, about which they are notoriously careless. The mortality of physicians under thirty is stated to be higher than that of any other profession during the same period of life. To learn "to reck his own rede" is a hard lesson in the busy round of practice.

The numerous and important relations of the physician to public hygiene are briefly considered, particularly in connection with registration of vital statistics and the prevention of the spread of contagious diseases. The reporting of births is rightly held to be the duty of the householder, who should also (or the undertaker) furnish the data as regards nativity, etc., in the death certificate, in which the physician should be called upon to state only the cause of death. In connection with the vexed question of the compulsory notification of diseases, the author holds that here, too, the parent or householder should be responsible. The duties and difficulties of health-boards and health-officers are alluded to in a few concluding paragraphs, and the importance of special training in dealing with the problems of hygiene is duly insisted upon.

The paper on *Drainage and Sewerage in their Hygienic Relations*, by Geo. E. Waring, Jr., supplements in an admirable manner the article by Dr. Billings. The question is considered, 1st, in connection with the removal of human excrement; and 2d, the removal of liquid household wastes. To effect the former, water-carriage is recommended as the best and safest system, provided an immediate and complete washing away of all foul matter is obtained. For buildings not connected with a sewer system the dry-earth method is advised, and the use of dry ashes or earth in the close-stool of the sick chamber to secure deodorization is suggested as a most simple and cleanly device. For the removal of liquid wastes an outline of a system of house-drainage is given, and without entering into detail, such directions and information are afforded as will enable the physician to pass judgment on plans submitted for his approval.

By far the larger part of the volume is occupied with a consideration of "general diseases from special morbid agents operating from without."

Dr. James H. Hutchinson, of Philadelphia, writes the articles on *Simple Continued Fever, Typhoid and Typhus*. The existence of the first-named disease is still questioned, and in this country many of the cases classed as such are undoubtedly instances of mild or abortive typhoid, while others are the result of exposure to excessive heat which seems to be the chief cause of the ardent continued fever of the tropics. Recognition may be accorded the disease on the understanding that it is an affection of varied causation characterized by slight pyrexia lasting from two or three to ten days. In this country cases of fever in children and young adults of one, two, or three days' duration are not uncommon, beginning with intensity and resembling in the general symptoms the initial stage of the eruptive fevers, and to such the term ephemera or simple fever is applicable. Cases of longer duration, eight, ten, and twelve days, are often examples of mild typhoid, and by many practitioners the term simple continued

fever is applied to all examples of this disease in which the symptoms do not assume a severe form.

The paper on *Typhoid Fever*, just one hundred pages in extent, has evidently been prepared with great care. The name of typhoid is, we think, wisely retained as the one originally given by Louis, and best known in this country and abroad, and the other names, enteric, pythogenic, and intestinal fever, are open to the criticisms applied to it.

In the account of the history of the disease a brief notice is given of the references by Willis, Sydenham, Huxham, and others to a disease which from the description was certainly typhoid. Under the designation "slow nervous fever," Huxham gives an admirable description of typhoid, and distinguishes it from the putrid malignant petechial fever, which was unquestionably typhus. To the French observers, Bretonneau, Petit and Serres, Louis, Chomel, and Andral, we owe a thorough knowledge of the clinical and anatomical appearances, particularly to Louis, whose great work appeared in 1829. The steps by which the profession reached a knowledge of the distinctions between typhoid and typhus fever are briefly stated, and full justice is done to the work of American physicians. Indeed, the question of the non-identity of the two diseases was generally accepted here many years before it was in Great Britain and in parts of the Continent. To Dr. W. S. Gerhard, of Philadelphia, is rightly awarded the honor of the first careful and complete statements of the differential diagnosis between the two diseases. Nathan Smith, in 1824, gave a good account of typhoid under the name of typhous fever of New England, and the able memoirs of James Jackson, Sr. (1838), and Enoch Hale (1839) of Boston, were largely instrumental in diffusing a knowledge of typhoid as a disease distinct from typhus. Dr. Hutchinson attributes the *Report on Typhoid Fever*, communicated to the Massachusetts Medical Society in 1838, to the younger Jackson, but he had been dead several years when his father wrote the memoir referred to. The paper by Dr. G. C. Shattuck, of Boston, in 1838, before the Medical Society of Observation, of Paris, on the differences between the typhus and typhoid fevers, influenced powerfully French professional opinion. Valleix also refers to a paper by Dr. Alfred Stillé, of Philadelphia, on the same subject, read before the same Society in 1838, which, as far as we know, has never been published. Bartlett's work on the *History, Diagnosis, and Treatment of the Fevers of the United States*, 1842, contributed to make the distinction between the diseases thoroughly known to the profession here. It is curious how widespread the opinion is in Great Britain that to Sir William Jenner is due the credit of first accurately distinguishing between these diseases, but in reality his important observations, 1849 to 1851, came at the end of a long series, and settled the question in Great Britain only; elsewhere the non-identity had been accepted for some years. The New Sydenham Society has recently republished Dr. A. P. Stewart's paper on this subject, read in Paris in 1840, and, among British writers, to him is due the merit of first recognizing the distinction we now know so well. The etiological relations of the disease are discussed at length. Certain interesting questions have been settled by the immense mass of information which has accumulated in the past fifty years, such as the greater prevalence of the disease in summer and autumn, and the greater liability of the young to attack; but other problems remain for solution, as the relation of moisture and temperature, and the rise and fall of the ground water, to which Buhl and Pettenkofer attribute so much influence.

The author agrees with Murchison and Liebermeister in not regarding the disease as contagious, and the occurrence of several cases in the same house, and the limited epidemics following the arrival of an infected person in a locality, are satisfactorily explained. There is no doubt that the feces contain the poison, and yet they appear to be harmless in the fresh state, as we rarely find nurses and hospital attendants affected, whose duties necessitate handling the fresh stools, to the emanations of which in any single case they must be exposed scores of times. Some change is necessary before they become virulent, but of the nature of this we are still ignorant. That the occupants of houses connected by ill-trapped drains with sewers into which typhoid discharges have been thrown are so liable to attack would appear to prove that sewer-gas alone was capable of conveying the poison, but the instances are rapidly multiplying to show that the contamination of water by infected sewage is the most fruitful source of outbreaks. Of these methods of infection many illustrative cases are given. On the question of spontaneous origin, the author says that, "after the elimination of all doubtful cases, there yet remains a certain number in which it is reasonably certain that there has been no recent importation of typhoid fever germs, as in the case which is reported by Metcalfe, and which occurred on Norfolk Island, and in that recorded by Low. The assumption does not seem an unwarranted one, that in these cases the poison of the disease, which had been present before in a latent condition, had suddenly been called into activity by favoring influences." The bacillus typhosus is dismissed with a brief paragraph and the specific connection regarded as not proven. The period of incubation is placed at between two and three weeks, "but in many cases it does not exceed ten days, and in rare instances has unquestionably been very much less." The clinical description is in all respects admirable, and occupies nearly a fourth of the article; no point, even the most trivial, seems to have been overlooked. In the section on complications and sequelæ, there might have been a more extended reference to the surgical affections so well described by Keen in his Toner Lecture. Separate accounts are given of the special features of typhoid fever in children, and in aged persons. Considering the frequency with which practitioners in country districts appear to meet with typho-malarial fever, somewhat fuller details might have been given of typhoid as modified by malarial influence, but a careful study of the cases with the help of Dr. Hutchinson's clinical description will, we feel sure, enable these anomalous forms to receive due recognition.

The diagnosis of typhoid fever rarely presents difficulties to the hospital physician, but in country parts, where malaria prevails, cases occur the nature of which is not easily settled; particularly is this the case with the remittent fevers which sometimes resemble typhoid very closely, and in which a low asthenic state may supervene. There are instances in which, from the clinical features alone, it is impossible to say whether we are dealing with a prolonged remittent fever in which the patient has lapsed into a typhoid state, or whether it is a case of enteric fever modified by the presence of the malarial poison. From typhus and the eruptive fevers there are not often serious difficulties in distinguishing typhoid. In the post-mortem room, where errors in diagnosis are pitilessly exposed, we have noticed specially the frequency with which acute tuberculosis and ulcerative endocarditis appear to be confounded with typhoid. Cases of pneumonia in debilitated persons may simulate typhoid very closely, and again we have repeatedly seen instances in which the

severe nervous symptoms, the twitchings, etc., have led to the diagnosis of meningitis, cerebral or spinal, or both.

In the treatment of the disease the rules laid down for the management of ordinary cases are those everywhere recognized as suitable—rest, careful diet, of which milk forms the chief ingredient, and vigilant nursing. Small doses of quinia and the mineral acids are given, and where the tongue is very dry and there is much meteorism, turpentine and ten-drop doses every two hours, as recommended by the Dublin physicians and by the late Dr. Geo. B. Wood. Among one hundred typhoid cases seventy-five per cent. will require no other treatment, and this number at least we can be sure of saving in any hospital and under any management, specific, hydropathic, or purely expectant. The battle is over the remaining twenty-five per cent.; a variable number of these, from ten to fifteen, depending somewhat on the type of the epidemic, are absolutely hopeless cases, either from the malignity of the fever or the occurrence of severe complications. With the remainder, the physician's success will depend much upon the readiness with which he detects indications for treatment and the promptness with which he meets them. Among these indications the pyrexia takes a prominent place. Like most American and English physicians, Dr. Hutchinson, while acknowledging the advantages of the cold bath, is indisposed to have recourse to it "except in cases of hyperpyrexia of such intensity that death seems imminent, and only to be averted by energetic treatment, or in cases in which other antipyretic remedies have failed to reduce the temperature." He thinks it possible by the cold pack and sponging to get very much of the antipyretic effect of the bath. The action of quinia in doses of from fifteen to twenty grains, repeated if necessary, is held to be of service in reducing the fever. Sodium salicylate has been disappointing. The more recent and very favorable action of antipyrin is not alluded to, having been introduced subsequent to the preparation of this paper. The author refers briefly to the specific treatment by calomel and by iodine and carbolic acid, and while he condemns the former holds that the latter should receive a full trial.

Typhus Fever, also by Dr. Hutchinson, is not so fully considered; nor does its importance demand anything like the same extended notice. Fortunately it is now an affection rarely seen, and to the great majority of physicians in this country it is practically unknown. In New York, Philadelphia, and some of the larger cities, slight outbreaks, or sporadic cases occur, but the conditions of filth and overcrowding, so indispensable for its progress, do not obtain in the same manner as of yore, and sanitary measures for its suppression are easily and effectually put in motion. Since 1866, no epidemic of any extent has prevailed in the eastern cities. The returns of typhus fever cases during the war of the rebellion are generally believed to be erroneous, the disease having been mistaken for typhoid, occurring in scorbutic subjects. The general description of the symptoms, complications, morbid anatomy, and sequelæ leaves nothing to be desired.

Relapsing Fever is a disease so rarely met with in this country that the article by the Editor seems unnecessarily full and prolonged, but the subject is a fascinating one in itself, and one which Dr. Pepper had carefully studied in the epidemic which prevailed in Philadelphia in 1869–70, and such an extended description is perhaps in keeping with the range of this work.

The Philadelphia epidemic, the clinical material of which serves as the basis of the article, did not favor the view that starvation and destitution

play a special *rôle* in the etiology, as the majority attacked were among the well-fed; but over-crowding was a very important factor. Neither age nor sex exerts any special influence. The negro race showed a greater susceptibility than could be accounted for by the greater overcrowding existing among them. Recent residence in the city was not noticed to have any special predisposing influence, as observed by Murchison in the London epidemics. Once the virus has developed, contagion is the essential cause of the spread of the disease, and the author regards the contagiousness as intense as in typhus, and the poison may also be carried by fomites. A full account of the spirillium Obermeieri is given, but fuller details are thought necessary before we can be certain that it is the specific contagious principle. The close connection of the spirillium with the febrile paroxysm, the inoculation of it in monkeys, and in some instances in man, with the production of the disease after a definite period of incubation, furnish details as full as we are likely to procure for some time, and should, we think, convince all but the serenely obstinate. The clinical description derived from a very careful study of the epidemic of 1869–70, at the Philadelphia Hospital, forms the most valuable part of the article, and represents a large amount of original work by the author and his colleague, Dr. Rhoads. With the assistance of Dr. Horace Hare, elaborate investigations on the urine were also made, the results of which are embodied.

The morbid anatomy is very fully considered, and the author believes that the existence of important and characteristic lesions has not been sufficiently recognized. Certainly the constant occurrence of the spirochæta in the blood may be regarded as a characteristic lesion, but with this exception the other changes in the blood and alterations in the viscera—ecchymoses, infarcts, swelling of the lymphoid tissue of the spleen, cloudy swelling, etc.—while important, can scarcely be regarded as distinctive. The mortality in the Philadelphia epidemic was rather high, 14 per cent., and the negroes suffered more severely than the whites. In the treatment of the disease, the ordinary antipyretics failed to give any satisfaction, and neither quinine nor arsenic had the slightest influence in postponing the paroxysms.

The editor has followed German usage in assigning the subject of *Variola* to a dermatologist, but Dr. J. Nevins Hyde, of Chicago, is well known as a man whose specialism has a broad foundation in general medicine, and in this particular disease he has had opportunities for making special studies. Not only is smallpox truly the great skin disease, from the terrible ravages which it may make in this structure, but there is probably no one affection in which so many different forms of cutaneous rashes may be studied. Besides the papular, vesicular, and pustular eruptions, there is a great variety of other rashes—erythematous, measley, petechial, etc.

The nature of the contagion is unknown: "There is at present no proof that any bacteria, vegetable germs, or other minute organisms foreign to the human body, are the essential causes of the disease."

In the description of the period of invasion, no mention is made of nausea and vomiting, which are among the most frequent and distressing symptoms. We have an excellent account of the initial rashes described by Hebra and Simon, which are now invariably regarded as important diagnostic features. The erythematous and petechial rashes are the most frequent; the former may be general, and the case may be mistaken for scarlatina or rubeola; they may, however, be limited to the groins, axillæ, or inner surfaces of the thigh (Simon's triangles), which are the situations

most frequently the seat of the petechial eruptions. Less common forms are rubeolôid, local or diffuse, and the eruption of urticaria. A knowledge of these prodromata and their significance is undoubtedly of great service in the early diagnosis of many cases of smallpox, but we have known it to be just the reverse, as in two instances of measles sent to a smallpox hospital under the impression that the rash was an initial one. Care should, however, prevent any such mistake. On the whole, we agree with Knecht and Curschman that the occurrence of the rashes is often a favorable symptom and indicates a mild course. They certainly precede varioloid more frequently than variola.

A good description is given of hemorrhagic variola, several types of which are recognized. They vary in different epidemics, and the author rightly says: "At one extreme are classed the inevitably fatal cases, where the patient sinks smitten with the malady even before the exanthem is developed; at the other are found cases of confluent variola not necessarily fatal, in the course of which hemorrhagic lesions appear in variable numbers." The remarks on diagnosis are well to the point. In the invasion stage "the occurrence upon the centre of the two cheeks of a vivid damask-red blush," circumscribed in area, is a symptom which Dr. Hyde has noted in many cases. Here, again, though gastric distress is spoken of, the author does not lay stress enough upon the vomiting. The triple combination of fever, intense pain in the back, and vomiting is, in some epidemics at least, almost pathognomonic, and time and again we have known all necessary precautions for isolation taken on their occurrence.

The directions for treatment are explicit and sound. The use of water compresses is recommended for the eruption, used tepid, with a drachm of boracic acid in each pint of water.

The articles on *Vaccinia* and *Vaccination* are from the pen of Dr. Frank P. Foster, of New York. The nature of vaccinia is carefully discussed, and the author accepts the conclusions of the Lyonnese commission, recently confirmed in England by Fleming, that smallpox and cowpox are wholly distinct from each other, and he rightly characterizes as most reprehensible the practice of inoculating cows with smallpox for the purpose of obtaining vaccinal virus. The old notion, however, is not yet dead, and in England has still active advocates. Of its derivation from horsepox there is also no evidence. It has been shown that the virus of horsepox may be used for the purposes of vaccination, and epidemics in horses have been known to occur simultaneously with the prevalence of smallpox. It is most natural to regard the vaccinia as a disease *sui generis*.

The general course of the disease, various irregularities, and the pathological anatomy are considered at length. To one interesting irregularity we may briefly refer, viz., the so-called generalized vaccinia. Most of these are instances of the accidental transference of virus from the pock by scratching. The author has never seen a general eruption as a consequence of constitutional infection, but does not question the occurrence of such instances and of their liability to be confounded with variola. During the prevalence of an epidemic of smallpox it is not very uncommon to have a recently vaccinated person attacked with the disease, and the question may be a very nice one, whether the eruption is generalized vaccinia or actually variola. The author thinks "failure of the secondary fever of smallpox, together with the fact that the disease does not spread by infection, will generally suffice to decide it." The distribution and mode of development, the occurrence of the rash on the pharynx, may also be of service, but certain cases prove very puzzling.

The various questions connected with vaccination are fully considered, including the important subject of vaccinal syphilis, the existence of which is now universally recognized. And, lastly, the technics of vaccination are described, and the merits of bovine and the humanized virus compared, greatly to the advantage of the former. In only one respect, promptness of action, can the latter be said to be superior; in all other particulars it is inferior.

The brief article on *Varicella* by Dr. Hyde does not call for special comment, but his remarks on the relation of the disease to variola are interesting: "Practically and clinically it is useful to regard these disorders as of a distinct nature. The arguments, however, in favor of such absolute distinction are not irrefutable. There is probably in both forms of disease a single virus, that of variola; but this, modified by evolution among generations of vaccinated children, has, in this process of natural cultivation or attenuation, produced a malady of tender years, whose attacks do not protect from variola and occur irrespective of vaccination."

The subject of *Scarlet Fever* is exhaustively considered by Dr. J. Lewis Smith, of New York, in an article extending over seventy pages, in which every question concerning this important disease is minutely discussed. In spite of the assertions of Klebs, Eklund, and others, we do not appear to have ascertained a specific micro-organism in the disease—at least one which conforms to Koch's law. But, whatever the virus is, we know well its remarkable tenacity, unsurpassed by that of any other eruptive fever. Many interesting illustrations are given of the extraordinary fixity of the poison. The incubative period is ordinarily within six days, but owing to individual differences and susceptibilities it may be postponed for twelve days.

From a careful study of the literature of surgical scarlatina Dr. Smith concludes that considerable proportions represent genuine cases, but in others, perhaps an equal number, the histories and symptoms indicate septic efflorescence. The presence or absence of faucial trouble is of great importance in distinguishing between these conditions. The same difficulty occurs in the so-called obstetrical scarlatina, and we have here also the genuine instances of scarlet fever and others representing the efflorescence of septicæmia.

The clinical features of the mild and malignant forms are accurately drawn, and nearly one-third of the article is taken up with the important complications and sequelæ. The throat troubles receive full consideration, and the acute cellulitis and adenitis are described at length. We miss an account of the chronic lymphadenitis which may be left after scarlet fever and persist for years, to the great disfigurement of the patient and annoyance of the physician. On the relation of the pseudo-membranous inflammation of the fauces to the disease the author holds strong convictions that "when pseudo-membranes occur on any of the inflamed mucous surfaces in scarlet fever, true diphtheria has with few exceptions supervened, if the patient live in a locality where diphtheria is prevalent." Interesting cases are given in illustration of scarlatinal rheumatism with endocarditis, and also of the serious complication with pericarditis, and of the formation of heart-clot. Due attention is called to the frequency of catarrh of the renal tubes, which has been thought to be as common as that of the bronchial tubes in measles; by the stimulus of cold it is liable to be aggravated to a positive nephritis. The tubal and interstitial changes in the kidneys in scarlatinal nephritis are fully described, the author following in the main the account of Klein.

The section on treatment is very extensive. The use of boracic acid as a possible antidote to the scarlatinal poison is recommended from the beneficial effects witnessed by the author recently in seventeen families. Full directions are given for the disinfection of rooms and clothing. The very specific details of the mode of treating mild and severe cases and for the management of the complications and sequelæ will be read with great satisfaction by practitioners, who will here find many valuable suggestions.

The articles on *Rubeola* and *Rötheln* are by Dr. W. A. Hardaway, of St. Louis, and show careful preparation and wide reading. They are written for the student and practitioner, and all superfluous details and references are wisely omitted. Rötheln is a disease with which American physicians are not yet sufficiently acquainted, and this paper will assist in diffusing very clear and positive information on the subject.

The *Malarial Fevers*, by the late Dr. Samuel M. Bemiss, of New Orleans, are considered under the three divisions: intermittent fever—simple forms; remittent fever; and pernicious malarial fever. The clinical features of each are accurately depicted, but the arrangement of the subject-matter is not always orderly. We miss a discussion upon the pathology of the disease, and no reference is made to the numerous recent investigations. The articles are of value as embodying the personal experience of a man who practised almost half a century in malarial regions.

Parotitis, Idiopathic and Symptomatic, is briefly described by Dr. John M. Keating, of Philadelphia. Ordinary mumps is certainly one of the most curious of the zymotic diseases, with its special localization and tendency to metastasis. We have no knowledge of the nature of the contagious principle or of the laws regulating its outbreaks. Epidemics, too, vary much in intensity and in the frequency with which the secondary manifestations appear. Evil consequences are rare, even after orchitis. Deafness is a serious complication, which Dr. Keating does not mention but of which a good many cases have been reported.

The article on *Erysipelas*, by Dr. J. Nevins Hyde, of Chicago, contains everything necessary from a practical and clinical standpoint, but in other respects it seems rather behindhand. Certainly mention should have been found of Fehleissen's remarkable investigations, made some two or three years ago, which have been extensively confirmed. We are aware that many of the articles for this volume were on hand some time ago, and the date 1885 on the title-page is in this respect misleading. In a medical consideration of erysipelas we should have liked to see a fuller account of the cerebral, pulmonary, and renal complications, some of which have been specially studied by American authors.

The late Dr. Bemiss, of New Orleans, discusses the subject of *Yellow Fever* in a manner altogether too brief for a disease of such importance, and in a work which should be a standard of reference for physicians in all parts of the country. The clinical details are most meagre. Some interesting facts are gleaned from the epidemic of 1878. The contrast is very striking between the mortality in the Charity Hospital, 50 per cent., and in the private practice of four of the leading New Orleans physicians, 7 to 10 per cent. The section on treatment is full and suggestive.

No one but Dr. Jacobi, of New York, could have appropriately written the article on *Diphtheria* for a work on medicine by American authors. For more than twenty-five years he has been one of the most ardent students of the disease, and his treatise on the subject is the best in any language. Dr. Jacobi's views on the disease are too well known to the profession to

require a lengthy notice. The advocates of the parasitic origin of the disease still find in him an unsparing opponent, and certainly in this disease we can agree with him that the bacteria question has not come any nearer its solution. We are still sorely in need of more positive information upon the etiology of this formidable affection. The author is not convinced that it is a sewer-gas disease; water and milk as agents in conveying the poison are doubtful. Many interesting details are given of the contracting diphtheria from animals. Hens and calves are very liable to it, and men have directly caught the disease from contact with them. Cats also suffer with it, and have taken the disease from children, and we know of an instance in which the opposite was believed to be the case. The question of the distinctions between croupous and diphtheritic inflammations has been re-opened by the recent emphatic statements of Virchow, who adheres to his old views. Whether membranous laryngitis (croup) is always a true diphtheria still perplexes the profession. Dr. Jacobi has long affirmed their identity, and on his side are now ranged a majority of the leading authorities on the subject. More than one-third of the article is devoted to the section on treatment.

With the disease at our doors, so to speak, few sections of the volume will be more carefully read than that on *Cholera*, by Dr. Alfred Stillé. It is an able exposition of our existing knowledge, written by a man who has had personal experience in nearly all the epidemics which have visited this country. The historical account is most interesting, and we can reasonably hope, from the comparatively limited extent of the outbreaks in 1866 and 1873, that, should the disease arrive this year or next, its ravages may be restricted. We naturally turn to the subject of the pathology to ascertain Dr. Stillé's views on the recent developments in this direction. That the chief factor in the disease is the gastro-intestinal flux induced by some specific poison which originates in Hindoostan every one admits, but of the nature of the poison we have only surmises. The recent investigations of Koch, a summary of which is given, certainly harmonize with the long-prevalent opinion that the poison consists of certain microscopic germs. We gather that the author does not consider Koch's bacillus as fully proven to be the *materies morbi*, and he very rightly calls attention to the fact of their rapid death when dried as particularly open to criticism. That cholera fomites may preserve their infectious qualities for weeks or even months is a well-established fact. Witness the importation of the disease into this country in 1873, when it was brought by immigrants who remained healthy on their voyage and after landing until they reached far distant points inland, when their effects were unpacked, and the disease broke out with great fury. Whether cause or only concomitant the comma-bacillus will certainly be of use in diagnosis for the constancy of its presence in cholera, and its absence in other conditions seems to have been fairly well established by the more recent investigations.

The author's remarks on the value of quarantine are most timely, and he condemns, in no measured terms, the resolutions of the Medical Congress of 1875, and of the German commission, which oppose quarantine as detrimental to the interests of commerce. The history of the Staten Island Station as given by Dr. Peters is a powerful argument: "There have been fourteen epidemics of cholera at Staten Island, and only four have reached New York."

The subject of *Leprosy*, dealt with by Dr. James C. White, of Boston,

has aroused a good deal of interest lately in the profession of the country, and the local endemics have been carefully studied. The cases occur among the French in Louisiana and New Brunswick, the Norwegians in Minnesota, and the Chinese in California. Fortunately there does not appear to be any danger of an increase, for on the Pacific coast, where there have been a greater number of cases than in any other locality, in no single instance has the disease been acquired in this country. The infectious nature of the disease is very strongly supported by the history of the disease in the Hawaiian Islands; and Dr. J. E. Graham, who has made the only exhaustive study of the leper settlement at Tracadie, N. B. (a colony which was believed to favor strongly the hereditary view), finds that the facts show very clearly that the disease was propagated from one person to another by contagion The bacterial nature of the affection appears pretty well established; and furnishes a satisfactory basis of explanation of all facts, historical, clinical, and pathological.

One of the most important contributions in the volume is Dr. Stillé's article on *Epidemic Cerebro-Spinal Meningitis*. It is an elaborate study of a disease which has prevailed most extensively in America, and has been known here almost as long as in Europe. The sketch of the various outbreaks since the first one at Medfield, Mass., in 1806, shows how widespread it has been. In Philadelphia it appeared first in 1863, since which date until the present (1884) it has never failed to appear among the causes of death. We doubt the propriety of setting down to the account of epidemic meningitis all the cases returned as such. Many physicians apply the term to any case in which with fever there have been twitchings of the muscles, delirium, signs of spinal trouble, and from post-mortem experience we have very small faith in the average diagnosis of cerebro-spinal meningitis. It is the same with veterinarians in many parts of the country; the diseases to which the name is applied are numerous, and on dissection of the animals cerebro-spinal inflammation is usually absent. The disease does occur epidemically in horses as in men, but what we contend is that, although in the intervals between epidemics sporadic cases do occur, these are few in comparison with the medley of affections which the ordinary practitioner tickets with the name cerebro-spinal meningitis.

The erratic characters of the epidemics are well illustrated, and the variable phenomena of the disease in different outbreaks. In no one feature is this more marked than the cutaneous symptoms. So constant are the petechiæ and extravasations in some epidemics that it has received the name of the spotted fever and malignant purpura, while in others they have been altogether absent. In the rapidly fatal hemorrhagic cases the diagnosis is very difficult from malignant (black) smallpox or scarlet fever. The descriptions of the individual symptoms and morbid anatomy are well drawn, and did space permit there are several points to which we should gladly refer. The whole article is one of special merit, and presents a peculiarly American disease from a local standpoint in a manner which will be highly advantageous for the future study of the affection.

The subject of *Pertussis* is very ably considered by Dr. John M. Keating, who believes the disease is caused by a special germ which excites the catarrh of the air-passages, a condition which exists for a variable period, and is influenced by such remedies as quinia and alum; and he also holds that there is a neurotic element which follows the initial catarrh, and may last for an indefinite time after the mucous membrane is normal.

The paper on *Influenza*, by Dr. James C. Wilson, of Philadelphia, gives an accurate and full description of an epidemic disease which is apt to be regarded too lightly by the profession and the public. The relations of the disease to the epizoötics in horses and cattle need more careful study. In some instances the affection seems to have originated among the horses and spread subsequently to men; in others the reverse has occurred.

Dengue is a tropical or semi-tropical disease, rarely seen in this country, about which we lack satisfactory details in many points. The article by Dr. H. D. Schmidt, of New Orleans, contains a good summary of the facts at present known, and full use is made of valuable observations made lately in the Southern States, where the disease has appeared in several localities.

Professor Law, of Cornell University, has written the papers on *Hydrophobia*, *Glanders*, and *Anthrax*, and has furnished an able presentation of these diseases as occurring in animals and man. In some subjects the details could have been amplified, as in the paper on anthrax in man, in which we find no mention of "wool-sorter's" and "rag-picker's" disease, which has been shown to be anthrax.

The subjects of *Pyæmia* and *Septicæmia* are discussed at length by Dr. A. B. Watson, of Jersey City. Too much space is occupied with the consideration of questions of etiology and pathology on which such confusion still exists. By careful studies, such as those of Koch, Rosenbach, and others, we may hope in time to reach positive conclusions on the connection of micro-organisms with the various inflammatory processes ending in the formation of pus, and on the relation of these to each other, but meanwhile the difficulty of framing a clear statement of the case is by no means diminished. In the very next section Dr. Lusk, of New York, enters very fully into the same question in connection with *Puerperal Fever*, now rightly regarded as an infectious disease due to septic inoculation, and he marshals in orderly array a most convincing series of facts in proof of the modern views. Into many of the interesting problems of this disease we should like, had we space, to follow Dr. Lusk, but, as the paper forms one of the ablest and most comprehensive articles on the subject before the profession, it is certain to be widely read and appreciated, and special criticism is less called for.

There are two articles in the volume on diseases which are fortunately not met with in America, the *Plague*, by Dr. James C. Wilson, and *Beriberi*, by Dr. Duane B. Simmons, of Yokohama, Japan. The essay on the Plague is carefully prepared and shows wide reading. The historical interest connected with the disease is so great that the space allotted to it is well occupied.

The article on Beriberi is disappointing; the exhaustive articles of the past few years by several German investigators which throw light on the pathology of the disease are not made use of. The date of the most recent paper referred to is 1880, and the researches of Scheube and others, which point to a peripheral neuritis as the cause of the disease, were made since this date. No mention is made of the occurrence of the disease in the Sandwich Islands, where it is known to prevail extensively among the Chinese.

Taking the volume as a whole, it is not too much to say that with but one or two exceptions the articles are all of first class merit and comparable with the best productions of our foreign colleagues in similar works. The typographical execution is of the very best, and the errors are remarkably few. A good index accompanies the volume.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

A Triple-divided Pharynx.

Dr. E. HOFMANN reports the case of a woman, aged 58, to whom his attention was attracted by her efforts at breathing, her long-drawn and piping respiration, and her livid color. Her voice also was nasal. The patient related that for twenty years she had suffered difficulty in breathing and swallowing. Sleep was possible only in the sitting position, and was frequently broken by cough, during which foam was ejected and a feeling of suffocation experienced which compelled her to leave her bed and seek fresh air. For five years she had been unable to take solid food, and only with difficulty was she able to swallow water, broth, milk, and other fluids, which for the most part escaped through the nose when attempt was made to swallow them.

Examination of the pharynx revealed the cause of the trouble. The pharynx was apparently divided into an upper, or pharyngo-nasal, a middle, or pharyngo-oral, and a lower, or pharyngo-laryngeal, portion by horizontal partition walls. In addition, the separation of the retro-pharyngeal space from the middle portion of the pharynx—a condition not seldom met in syphilis—was accomplished as follows:—

The patient's soft palate, as a result of syphilis, was in part destroyed and in part converted into an immovable strip of cicatricial tissue, which had grown fast to the posterior wall of the pharynx, near the arcus pharyngo-palatinus, thus forming a cleft about three-fifths of an inch long and one-fifth of an inch across in its transverse diameter, through which the middle and upper portions of the pharynx communicated. Close to the upper portion of the cleft the uvula was found much displaced, but well preserved. The laryngeal mirror placed before this cleft did not bring into view either the inferior pharyngeal cavity, the root of the tongue, the epiglottis, or the larynx.

The inferior pharyngeal space was almost entirely separated from the middle by a partition wall. The posterior portion of the tongue was in its entire breadth united with the posterior and lateral pharyngeal walls. In addition there was present, on either side, a horizontal, dense, cicatricial band as broad as a finger nail, while on the right and the left side of the pharynx was found a somewhat deep blind pocket, through which a sound could not be introduced.

Between the two cicatricial bands and at the centre of the space careful inspection revealed the presence of a small opening, which led into the lower cavity. This passage was round, covered with foam, and scarcely large enough to admit a catheter of moderate size, and was the sole communication between the external buccal orifice, the œsophagus, and larynx for the passage of air and food.

Dr. Hofmann successfully applied the galvano-cautery to the cicatricial right band, which was found to be less superficial than it appeared at first sight. After the application the tracheal sound was introduced with marked improvement in the respiration of the patient. Hemorrhage during the operation was unimportant.

At a second operation the left side of the inferior pharyngeal space was opened, and the epiglottis was found in great part to be absent, only a small stump remaining.

Examination made four days after the second operation showed the pharynx to be funnel-shaped in the region of the epiglottis, and the patient was now able to eat and drink *ad libitum*, and to breathe and sleep without difficulty. A third attempt to remove a slight remaining constriction caused such profuse hemorrhage that, after ineffectual effort to check it having been persisted in for an hour and a half, tracheotomy was performed, and the pharynx tamponed. This measure was successful, and hemorrhage not recurring, the patient was discharged cured.—*Deutsche Medicinische Wochenschrift*, July 9, 1885.

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Congenital Malformation of the Heart. Existence of a Canal by which a Communication between the Right Ventricle and the Origin of the Aorta was established.

M. A. CAYLA reports, in *Le Progrès Médical* of August 15, 1885, a rare congenital malformation of the heart. The subject—a child aged ten days—during life exhibited symptoms of defective circulation and of asphyxia. Post-mortem examination revealed the following anomalous condition of the heart:—

The organ was considerably increased in volume, globular, and filled almost entirely the left side of the chest, so that the lung on this side could not be seen, while that on the right was of normal size. Further examination showed the left lung to be only one-third the normal size.

The heart was of the shape of a triangular prism, presenting an anterior, a posterior, and a right face formed by the right ventricle. In height it measured three inches, and had a breadth of two and one-half inches. The right ventricle constituted at least two-thirds of its entire volume, while the left was consequently considerably diminished.

On cutting through the apex it became evident that the right ventricle was divided into two cavities.

On the left of the interventricular septum, at its inferior limit, the knife reached a third cavity—the left ventricle, so situated that the apex of the heart was entirely formed by the right ventricle. Section of the two cavities of the right ventricle showed two passages, the one normal, the other abnormal, and leading to the origin of the aorta at a level with the sigmoid valves. Communication also existed between the left ventricle and the aorta. Three incisions thus revealed three cavities, two ventricular and between them a third hollowed in the tissue of the heart, and separated from the right ventricle by a partition two-fifths of an inch in thickness, and from the left by a partition of normal thickness, which at no point presented a solution of continuity.

The direction of the canal was oblique, opening by its lower extremity into the right ventricle and terminating above in the aorta. It was funnel-shaped, and at the inferior portion could receive the end of the little finger, while at its termination in the aorta its dimensions were those of a quill.

The aorta valves were present, but exhibited irregularities on their surface. The walls of the aorta were thin. The remaining valves of the heart were normal.

M. Cayla, under the direction of Prof. CORNIL, has sought and failed to find record of any similar anomaly of the heart, and concludes that this case, if not unique, is at least very rare.

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Anomalies in the Development of the Hymen.

Dr. R. DOHRN, in the *Zeitschrifte für Geburtshülfe und Gynäkologie*, Band XI. heft 1, gives the following summary of the principal anomalies of development observed in the hymen, the author first stating that the normal form of the hymen is the annular, with predominance of the posterior portion, and the approximation of the hymeneal orifice toward that of the urethra.

The orifice of the hymen rarely occupies the centre of the membrane, and admits the annexed eight varieties of abnormal hymen:—

1. The denticulate hymen serrated in contour, frequent.
2. The fimbriated hymen with broken edges.
3. The infundibuliform hymen with the edges drawn above, not rare in the new-born, but found also in adults.
4. Hypertrophied hymen, rare, only two cases having been observed; hypertrophy is partial, and is observed rather in the anterior portion.
5. Multiple hymen characterized by the existence below the hymen of a second partial membrane.
6. The divided or bifurcated hymen, whose orifice is divided into two portions by a partition generally vertical.
7. The columnar hymen, in which the partition is extended below the hymen into the vagina.
8. The cribriform hymen, in which in lieu of a single orifice there are numerous small ones.

Absence of the hymen is very rare; it has been observed by Rose, Toulmouche, Tolberg, etc.

Displacement of the hymen toward the apex of the vagina has been observed by Krimer.

Anomalies in the texture of the hymen are very variable, ranging from that of a spider's web to the consistency of cartilage or bone.

Persistence of the hymen during pregnancy has been observed very frequently. Tolberg describes a hymen which remained intact after the expulsion of a fœtus of six months.

Atresia of the hymen is of all anomalies the one which attracts attention most frequently, and demands surgical intervention.—*Revue des Sciences Médicales*, July, 1885.

MATERIA MEDICA AND THERAPEUTICS.

Styptic or Hæmostatic Ether.

Dr. B. W. RICHARDSON (in *The Asclepiad* for July, 1885) calls attention to styptic or hæmostatic ether. He says: In first observing the influence of the cold produced by the dispersion of absolute ether during operations, nothing struck me more than the effect of the cold in immediately stopping the flow of blood. For a time, cold alone, when carried to a sufficient degree, prevents all venous

and capillary hemorrhage, and even the hemorrhage from small arterial trunks. After a time, however, as reaction returns, and the vessels relax under the influence of heat derived from the renewed circulation, there is bleeding, which, if a wound be closed too quickly, is a cause of after-trouble. The observation of the immediate effects of cold led me to think that if they could be supplemented by a styptic which would spray evenly with ether, and which would take up the constringing action when the vessels commenced to relax, an important desideratum in practice would be supplied.

With this object in view, I requested Mr. Robbins to make for me a solution consisting of absolute ether, having a boiling point of 95° Fah., charged to saturation at a low temperature with tannin, and afterwards treated with collodion, a little short of saturation. The compound came out well. It ran easily through the spray tube without blocking; it produced good local anæsthesia, and it possessed an agreeable odor.

In order to test to the extreme the effects of this preparation as a styptic, I took sheep's blood, removed, by whipping, all the fibrin previous to coagulation, and then let the blood remain exposed to the air for two days to insure partial decomposition. In this way the blood was rendered nearly as fluid as port-wine, and in the most unfavorable condition for being transformed into clot. A few drachms of this blood were now placed in a saucer, the saucer having been warmed to the temperature of the body. The spray of the styptic ether was then directed upon the blood from a full-sized spray tube, and in five seconds the whole mass of blood was so thoroughly solidified that the saucer could be turned upside down without any escape of fluid. The blood, which had previously presented the odor of putrefaction, was also deodorized, and remained inodorous for ten days. It had a firm, leathery consistence, and on its upper surface a fine whitish layer, with a bright vermilion color beneath.

These are the effects of the styptic ether on blood, the spontaneous coagulability of which has been lost; but they are trifling when compared with what takes place on blood newly drawn, and containing fibrin. In this case coagulation under the spray is the work of a second.

When styptic spray is directed on an open bleeding living surface, the primary effects are those produced by the cold—namely, the condensation and whitening of the tissues. If blood be flowing it solidifies, and when the parts relax, new blood that may ooze up enters the solid blood as though it were a sponge, the coagulation soon stopping further flow.

The elements of this process are three in number:—

1. The immediate constringent effects of cold on the bloodvessels.
2. The styptic action of the solution on the fibrin and albumen of the blood.
3. The extreme mechanical fineness of distribution of the fluid on the bleeding surface.

Styptic ether can also be applied to the hemorrhagic surface after the extraction of a tooth; for hemorrhage from cancerous disease of the uterus or other cause; and in cases of hemorrhage from piles.

I introduced styptic spray through the *Medical Times and Gazette* of April 26, 1866, have had it in regular service ever since, and have not once known it to fail in the uses first claimed for it.

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The Application of Naphthol to Some Forms of Cutaneous Disease.

P. SOMBRET (*Thèse de Paris*) gives the following *résumé* of the advantages possessed by naphthol in the treatment of some forms of skin disease.

1. The preparations are odorless, and stain neither the skin nor clothing.

2. In the use of naphthol, with the precautions advised by Kaposi, there are observed neither forms of intoxication (albuminuria, coloration of the urine) nor active inflammation of the skin.

3. In scabies, naphthol is an excellent parasiticide and exercises a very beneficial effect upon the eruption due to the disease.

4. In pediculosis the remedy is efficacious, and its use is free from danger and inconvenience.

5. In psoriasis no satisfactory effect has been observed.

6. In prurigo (of Hebra) naphthol causes the itching to disappear rapidly, and has beneficial effect upon the eruption. It, nevertheless, does not possess a curative power in this disease greater than that possessed by other remedies.—*Revue des Sciences Médicales*, July, 1885.

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Pyrogallic Acid and Collodion as a Remedy for Psoriasis.

Dr. GEORGE T. ELLIOT, in the *New York Medical Journal* of September 5, 1885, recommends the following formula in the treatment of psoriasis:—

℞.—Acidi pyrogallici, ʒjss–ʒij.
Acidi salicylici, ʒss.
Collodii flex, ℥ij.
M. et ft. sol.

Keep in a dark-colored bottle.

The results obtained in treating psoriasis with the pyrogallic collodion have been in every way satisfactory. A great change could be seen in the lesions after a few applications. There was an absence of scales and a diminution in the hyperæmia, and the plaques and spots appeared less elevated. The time which was required in curing the psoriasis by means of this solution has naturally varied according to the extent of the disease and the length of time which it had existed. Any rule in regard to it could scarcely be made. The quickest results obtained were in psoriasis guttata, and the slowest in a case of psoriasis nummularis of long standing. In cases where the eruption is universal, or nearly so, it is of course advisable to treat the various portions affected *seriatim*. The results will be just as satisfactory; only the time required will be longer.

In one other form of skin disease, herpes tonsurans, Dr. Elliot has used this solution of pyrogallic acid, and with most gratifying success. Its effect upon the lesions has been surprising, two applications having been sufficient in the majority of cases to effect complete cure.

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On the Failure of Salicyl-Compounds in the Treatment of Acute Rheumatism accompanied with Inflammation of the Genito-Urinary Mucous Membranes.

Dr. THOMAS R. FRASER, in discussing the failure of the salicyl-compounds in relieving rheumatism complicated with gonorrhœa, thus gives expression to his views, holding:—

1. That many of the cases which have been considered to be gonorrhœal rheumatism were merely cases of toxæmia, produced by a toxic substance absorbed from an inflamed genito-urinary mucous membrane. The cases I refer to are met with especially among the examples of chronic mono- or oligo-articular inflammation.

2. That in other cases the disease is a rheumatism modified by toxic infection from a venereal or non-venereal inflammation of the genito-urinary mucous membrane. The rheumatic or toxæmic phenomena may in these cases be present in very different degrees of relative prominence, sometimes the rheumatic, and, at

other times, the toxæmic phenomena being the more prominent. This, the true form of gonorrhœal rheumatism, presents itself chiefly as an acute or a sub-acute disease.

3. That in no variety of gonorrhœal rheumatism is the progress of the disease materially influenced by the administration of salicyl-compounds; and as the distinction in acute, and even in sub-acute cases between gonorrhœal and ordinary rheumatism is always at the commencement, and sometimes during a great part of their progress, a matter of much difficulty, the failure of the salicyl-compounds in the former disease is a valuable assistance in diagnosis.—*Edinburgh Medical Journal*, September, 1885.

MEDICINE.

The Preventive Inoculation of Cholera.

At the late meeting of the Congrès de l'Association Française pour L'Avancement des Sciences, held August 12, 1885, M. CHAUVEAU read a communication upon the preventive inoculation of cholera, in which the following conclusions were reached:—

1. The subcutaneous connective tissue is a region but little favorable for the proliferation of the pathogenic material of the cholerine virus and for the development of a malignant disease.

This tissue is accordingly very appropriate to serve as a point of introduction for the virus to produce an attenuated infection capable of exercising a preventive influence.

2. The slight resemblance which exists between the characteristics of this imperfect infection and those of true cholera cannot be invoked as a reason for denying *a priori* the choleraic nature of the slight symptoms produced by inoculation, and for denying absolutely the possibility of thus protecting against the natural disease. The efficacy of preventing inoculation is rendered probable by the example of numerous well-established analogous experiments which have been tried with great success in veterinary medicine.

3. In the well-known cases to which allusion has been made, and which especially concern peripneumonia and emphysematous charbon, virulent infection by the pathogenic material, properly so called, is undeniable, and is caused simply to produce immunity.

Soluble materials contained in the very minute quantity of the inoculated liquid do not exercise any save an indirect action upon the results of inoculation.

There is no reason to suppose that the ptomaïnes of bouillon in choleraic cultures exert any active influence, notwithstanding the relatively large quantity of bouillon injected in the inoculations of M. Ferrán.

4. The more perfect immunity which, according to the statistics of M. Ferrán, will be conferred by a second or third inoculation by an abundance of material, proves nothing in favor of the intervention of a soluble poison. It is, indeed, established in science, that the *same attenuated culture*, inoculated on different occasions *in very small quantities*, increase seach time the immunity against the action of strong virus, due to the multiple result of the infection produced by inoculation.

5. Tolerance of the human organism for large quantities of infectious bouillon can probably be explained not only by the unfavorable conditions afforded by the

region into which the bouillon is introduced, but more still by the feeble virulent activity of the material. It is possible, indeed, that the cultures of comma bacilli in sterilized bouillon under ordinary circumstances may be naturally weak.

Nothing could be easier, if it were necessary, than to attenuate them still further by heat, as the comma bacillus belongs to the class of pathogenic microbes whose activity is very easily modified by this agent.

6. The quantity of the virulent material inoculated should be regulated according to the activity of that material. It is possible that the liquid used by M. Ferrán is so little active that it is necessary to inject it in the dose of one cubic centimetre, but the evidence justifies the belief that the injections would be entirely as efficacious if they were made with only two or three drops of a fluid well prepared.

7. There is little chance of creating foci of infection by the practice of preventive anti-choleraic inoculations, because the inoculated subjects are not in a condition favorable to the production and dissemination of malignant germs.

8. Active scientific deductions therefore authorize tentative preventive inoculations in cholera by the injection of liquids containing cultures of the comma bacillus into the subcutaneous cellular tissue.

They explain the innocuity of these inoculations, but do not permit their *efficacy a priori* to be affirmed. For the latter rigorous, comparative experiments are necessary.

9. From the general results of this study, there is reason to follow with interest the inoculations of M. Ferrán, notwithstanding the unscientific character of his preceding researches and of his actual practice.

There is reason likewise to examine critically the results which he announces. —*Le Progrès Médical*, August 22, 1885.

The Comma Bacillus in the Organism; its Cultivation and Products of Fermentation.

Nicati and Rietsch, in the *Arch. de Physiologie*, vol. xvi. p. 72, make a report concerning the occurrence of the comma bacillus in cholera, and also of their observations at Marseilles concerning its morphological and biological peculiarities. After a description of the methods of microscopical examination pursued by them, which do not differ materially from those employed by Koch, they append the collected results of thirty-one post-mortem examinations.

They state, in the first place, that in every instance the presence of the comma bacillus was confirmed; but from further data and a tabular review it appears that in six instances only negative results were obtained. However, on account of insufficient examination of the bodies of the deceased, they place no value upon their conclusions. In one instance the bacilli were found in the stools of the patient, but could not be discovered in the body after death. The number of bacilli varied according to the course and duration of the disease. In rapid cases they appeared to diminish considerably from the fourth to the fifth day. In vomited matter they were discovered in three out of eight cases. The anatomical changes of the intestine were principally confined to the epithelium. This peeled off, and the inner layer of the bowel had the appearance of being strewn over with flour. Injection of the follicles and Peyer's patches, as well as infiltration of these glands, was observed later, but not as a constant appearance if the epithelium was entirely desquamated. Throughout the extent of the affected intestine the bacilli were found in abundance; in rapid cases they were found in the duodenum and throughout the whole smaller intestine. They were not present in the stomach. In the less rapid cases they were found only in the ileum, especially in the neighborhood of the ileo-cæcal valve.

In the moist chamber the bacilli increased so rapidly in the mucosa, that finally the tissue of the mucous membrane could no longer be seen. Furthermore, the bacilli were easily recognized in the bowel beneath the epithelium and in the connective tissue. They were sought without success in the liver. They were found, however, once in the ductus communis choledochus, and in two of five cases in the gall-bladder.

As control experiments, the intestines of three suicides and the stools of twelve diarrhœa patients were vainly searched for the comma bacillus.

These results the experimenters consider as entirely confirming the communications of Koch, with whom they also agree in their report concerning the gelatine and plate cultures, together with the appearance and growth of the colonies. In consequence of their agreement with the report of Koch, more extended reference to their account is unnecessary. In addition to their study of solid culture material, the investigators also cultivated the bacillus to obtain more exact information as to biological peculiarities in fluid media. Here they observed in all their cultures a peculiar but not unpleasant odor; neither was it a putrid odor, nor common to the contents of the bowel. This, they consider, had its origin in the alkaloid which Villiers has demonstrated to be present in the intestinal contents of cholera patients, and which has the odor of whitethorn.

The recognized morphological peculiarities of the bacillus are also pointed out. Special attention should be called to the fact that the spiral forms of greater circumference which, in consequence of their length, moved only slowly, were especially found in fluid culture media.

In conclusion, attention is called to the peculiarities of another curved bacillus whose microscopic appearance could easily cause it to be confounded with the comma bacillus.

This bacillus Nicati and Rietsch found in the intestine of a healthy man, and by culture it is easily distinguishable from the true comma bacillus.

The colonies differ considerably from those of the latter by a uniform radiate striation proceeding from a dark nucleus.

Morphologically, it is of plumper shape than the comma bacillus, and only slightly inclines to a spiral form. In the ground water of Lille, Hericourt has discovered still another curved bacillus. This Nicati and Rietsch consider identical with the one described by them, and also hold both to be identical with the bacillus of Finkler and Prior.—*Deutsche Medicinische Wochenschr.*, August 27, 1885.

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Two Cases of Severe Anæmia cured by the Subcutaneous Injection of Blood.

Dr. OSCAR SILBERMANN reports, in the *Deutsch. Med. Wochenschrift* of June 25, 1885, two cases of severe anæmia cured by the subcutaneous injection of blood.

CASE I.—The first case is that of a boy eight years of age, who, after a severe attack of measles and whooping-cough, became exceedingly anæmic. The face was sallow and the mucous membranes pale. There existed also palpitation of the heart, fainting, vomiting, and a systolic mitral murmur. The patient was persistently drowsy, and sometimes slept almost the entire day. Slumber during the night was frequently disturbed by slight fever. Examination of the blood showed it to be very pale in color, and also to contain white corpuscles in a proportion far beyond the normal. March 1, 1885, subcutaneous injections of blood were administered, according to the method recommended by Ziemssen. After careful disinfection of the arms of both donor and patient, as well as of the hands of the operator and his instruments, forty-five grammes of blood were taken from the arm of a healthy brother of the patient, and

received into a thoroughly disinfected basin, and defibrinated in a water-bath having a temperature of 102.2° F. Twenty grammes of blood were then injected into each thigh, by means of a warmed and thoroughly disinfected glass syringe. The operation only required sixteen minutes.

The condition of the patient in the evening was favorable. The temperature was normal, and there was no inflammation or pain at sites of injection.

Two days after the operation the condition of the patient was considerably improved. The complexion was more healthful. No fainting fits had occurred.

March 10, a syncopal attack having recurred the day previous, a second injection of forty grammes of blood was administered.

The procedure was as before painless and unaccompanied by adverse symptoms, and the progress of the patient toward recovery was uninterrupted.

The vomiting, palpitation of the heart, and attacks of fainting no longer were present, and May 20, less than three months after the inauguration of the treatment, the patient was nearly cured.

Case II.—The second case reported by Dr. Silbermann is that of a girl eleven years old, who, in consequence of profuse hemorrhage from the removal of an intestinal polypus, became very much reduced and anæmic. As in the preceding case marked paleness of the skin and mucous membranes existed, together with attacks of syncope, vomiting, and gastric pain. Respiration was very feeble, and a systolic murmur was recognizable at the apex of the heart. The blood was pale, and the proportion of the white corpuscles greatly increased. February 26, subcutaneous injection of blood was practised with the same antiseptic precautions as in the preceding case.

The results agree in all respects with those observed in the first case. By the middle of March, in addition to the disappearance of the symptoms before enumerated, the weight of the child had increased nearly seven pounds, and at the present time her health is perfect.

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Contribution to the Study of Morphiomania.

Dr. Marandon de Montyel summarizes the results of his investigations of the production of morphiomania as follows:—

I. Morphiomania has its origin either in a demand for intellectual excitation and psychical pleasure or in the acquired habit.

II. Injections of morphia have as a result a double action: a benign and a special action upon the nervous system by which its natural function becomes impossible after a certain term without the assistance of the poison. These two effects are separate and distinct from each other; the second is manifested when the first is no longer exhibited. There are, then, two kinds of morphiomania; the one resulting in temporary good effect, the other a vital necessity; and after a variable period the cases of the first order pass over into the second.

III. This double action of morphia upon the nervous system renders it an extremely dangerous medicament, and it therefore should not be prescribed hypodermically except in cases of absolute necessity.

IV. It is also extremely dangerous to combat morphiomania by the substitution of alcoholics, inasmuch as chronic alcoholic insanity may result therefrom.

V. Morphiomania may always be treated by abrupt withdrawal of the drug except in conditions when such methods are contraindicated by the vital forces of the patient or concomitant pathological phenomena. The method should also be abandoned if reactionary collapse result.

VI. In the treatment of morphiomania by gradual suppression of the drug, it appears advantageous to combine with the progressive diminution of the dose the recoil of momentum by fusing two injections into one.

VII. The medico-legal questions pertaining to morphiomania are certainly based more upon extra-judicial than upon judicial clinical observation.

VIII. Observation shows that a morphiomaniac may have great energy of will while the poison has not yet determined any disorder of intellect. There is here a serious proof of what has already been said, that responsibility only ceases with the period of psycho-physical marasmus.

IX. Relative to the responsibility of morphiomaniacs who commit crimes or offenses to satisfy their passion, it is, perhaps, necessary to distinguish whether they have yielded to the simple appetite for the pleasant effect or to a physical necessity dependent upon the instinct of self-preservation. A conclusion of irresponsibility in the latter case seems justified.

X. In the exact appreciation of the intellectual troubles caused by the abuse of the hypodermatic injection of morphia, it is important correctly to appreciate the existence of predisposition to insanity, and the delirium produced concurrently by the absorption of other substances such as alcohol and belladonna.

XI. It is necessary to retard the continual progress of morphiomania by disseminating general information in the upper ranks of society concerning the deplorable and certain evil effects following the use of the drug, and to exercise an active surveillance over pharmacists, and impose special penalties upon those who dispense morphia without a physician's prescription.—*L'Encéphale*, May and June, 1885.

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Case of Tubercular Meningitis subsequent to Lupus. Tubercle Bacilli in the Blood.

DOUTRELEPONT, in the *Deutsche Med. Wochenschrift*, No. 7, 1885, reports the case of a girl eighteen years of age who was affected with lupus in various parts of the face, and with scrofuloderm, especially of the neck. In some portions of the skin affected with lupus and in the granulations of the scrofuloderm, tubercle bacilli were found. Treatment by erasion and corrosive applications together with the internal use of arsenic and iron resulted in the cure of the patient, and the disappearance of discoloration of the skin.

Shortly, however, the patient was seized with violent pain in the breast, headache, and violent vomiting. Blood taken with great care from the sound skin of the cheek contained tubercle bacilli. Death occurred in a short time, and post-mortem examination showed the pia mater at the base of the brain to be filled with miliary tubercle. The lower lobes of both lungs contained yellowish-gray granules and aggregations of tubercular material, while tubercular nodes were also present in the ileum. Blood taken from the internal jugular veins and the heart contained tubercle bacilli.

From the appearances presented Doutrelepont concludes that the general infection resulted from the initial tubercular lesion in the skin.—*Centralblatt für die Med. Wissenschaften*, August 1, 1885.

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A Case of Paralysis and Suture of the Radial Nerve.

Dr. E. HOFFMANN reports the case of a man, aged 31, in whom fracture of the humerus in its middle third occurred as the result of a fall.

A plaster bandage after remaining three days was replaced by one of soft material (muslin), and in six weeks, on removal of the dressing, firm union had taken place, while complete paralysis was observed along the entire course of the radial nerve.

Immediate treatment by electricity was without result, and three months subsequent to the injury the patient was operated on by Bardenheuer.

The continuity of the nerve was found broken at the seat of fracture, and surrounded by a thick mass of callus.

The callus was removed and the nerve sutured, and electricity regularly applied for three months when the patient was discharged uncured.

The patient finally came under Dr. Hoffmann's attention, still suffering with complete left radial paralysis. The hand and finger were in a position of strong volar flexion, out of which they could be brought only by the application of considerable force.

No voluntary motion of the muscles of the forearm supplied by the radial nerve was possible, and stimulation with the induced current also was without result, the same being true of weak galvanic currents. Strong primary currents, however, excited slight motion, especially in the carpal extensors, and since the cathodal closing current produced greater contraction than the anodal closing, the prognosis was not considered hopeless. The patient was persuaded to persevere in electrical treatment for six months.

A splint was applied to the arm by which the hand and finger were held in dorsal flexion in order to extend the volar bands and the tendons. Systematic application of the galvanic current was also made, with the result that in eight weeks the Faradic current was able to produce contraction of the paralyzed muscles.

In three months voluntary motion was possible for the first time, when the forearm was held perpendicular to the arm; partial dorsal flexion of the hand was also possible.

Within a year after the reception of the injury, the function of the hand and muscles was entirely restored, save voluntary motion of the extensors and long abductor of the thumb, but the electrical contraction of these is such that there is no doubt that ultimately the complete usefulness of the hand will be restored.

Dr. Hoffmann also refers incidentally to other recorded cases of nerve-suture in Friedlander's *Fortschritte der Medicin.—Deutsche Med. Wochenschr.*, July 2, 1885.

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Pseudo-Syphilitic Paralysis.

M. Ferdinand Dreyfous, in concluding an able paper upon pseudo-syphilitic paralysis, which he designates as "Parrot's disease," gives the following points in reference to the diagnosis of the disease:—

1. *The age of the patient.* Pseudo-syphilitic paralysis always appears during the first month after birth.

2. *Pains.* This symptom is difficult to establish, and the crying of the child when examination is made is its only index.

3. *The persistence of certain movements.* In contrast with true paralysis in the pseudo-paralysis of syphilis, certain movements of the fingers are possible, although their combined motion is impossible.

4. *The swelling of a bony epiphysis.* This symptom, if the swelling is extensive, is easily recognizable, but may be scarcely appreciable, and escape attention even when paretic phenomena are well established.

5. *The progress of the paralysis.* Paralysis in the beginning is not general, but attacks first one member, then its fellow, and subsequently the two others symmetrically.

6. *The general condition of the patient.* Syphilitic children, affected with pseudo-paralysis, are generally cachectic, as a result of the disease. No fever is present. The temperature is more probably subnormal than elevated.

7. *Inquiry concerning the antecedents, and the present condition of the parents.* Examination of the mother should be made, provided that of the child

is negative, and inquiry made concerning miscarriages, the mortality of children born at term, etc. The history of the father should also be examined.—*Revue de Médecine*, August, 1885.

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Periodic Paralysis of the Limbs, with Loss of Electric Excitability.

A remarkable case of periodical paralysis is recorded in a paper by Professor WESTPHAL, *Berliner Klinische Wochenschrift*, Nos. 31 and 32, 1885. The patient, a boy of 12 years, was under close observation for several months, during which he was subject to occasional attacks of absolute loss of power in the limbs, coming on almost always at night, lasting for a few hours and disappearing with a period of quiet sleep before the morning. His general health was good, and no signs of nervous disease could be traced in the case. During the periods of paralysis, however, the remarkable fact was observed that the nerve-trunks and the individual muscles in the affected limbs had completely lost their electric excitability even under the irritation of a very strong current. At other times, the reactions were quite normal, but slight differences between the two sides persisted for some time after the complete return of voluntary movement. There was no sign of rigidity or contraction in any of the muscles during the attacks, nor were the general sensations disturbed. The plantar reflex was absent, but the cremaster and abdominal reflexes and the knee-jerk were normal. The latter was at times unequal upon the two sides. The fullest particulars of each seizure are given in detail in Dr. Westphal's paper. The progress of the paralysis of the limbs could be clearly described by the patient, who remained quite sensible throughout. In the early history of the case, there was reason to believe that scarlatinal nephritis had formerly been present, but the renal and all other functions remained normal throughout the period during which the patient was under observation. The onset of the attacks was attributed to exposure to a draught, the boy having complained the day before of indefinite sensations in the limbs, and pains in the feet. He became quite powerless in the following night, and suffered from great thirst, a feeling of extreme heat, and profuse sweating. At first the attacks of paralysis recurred at intervals of four to six weeks, but became more frequent, at last sometimes appearing many times in one week.

In his remarks upon the case, Professor Westphal cites three other published cases as bearing some relation to this apparently unique form of paralysis. In all of them there were points of resemblance to it, although none could be said to be identical. Especially with regard to the periods of recurrence, there was a marked difference, as in two of them the attacks followed a regular quotidian or tertian course. In all the cases the paralysis began in the lower extremities. The muscles of the face and of the eye remained unaffected in all, nor was any affection of bladder or rectum observed. The loss of electric contractility and its rapid recovery are conditions apparently quite peculiar to Westphal's case. In relation to it he says: "We know of no disease either of the spinal cord or of the spinal nerves in which anything similar to it has ever before been observed, and as regards any explanation of it, physiology leaves us completely in the dark." The sensations of heat and the extreme sweating experienced by the patient suggest the possibility of some profound alteration of the vascular supply, and hence of the nutrition of peripheral nerve-endings, but such an explanation is of necessity purely conjectural.—*The Medical Times*, August 29, 1885.

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Suppurative Epiglottitis, complicated with Œdema of the Glottis, and followed by Death from Asphyxia.

Dr. FREDET reports the case of a young man, who, after drinking and singing a great deal, became involved in a quarrel and was severely choked. Near

midnight he left the inn where the quarrel occurred, very warm, while the night was damp and cold, to go to his home. While on the road he experienced considerable difficulty in respiration, and said to his friends that he attributed his trouble to the pressure made upon his neck by his assailant. Disturbance of respiration became more intense, and the suffocative attacks so much increased in violence that it became necessary to carry the patient home, where he died an hour and a half after his departure from the inn. The rapid death and the charges made by the deceased previous to his death rendered it probable that the injury received was cause of death, and the assailant was arrested. Post-mortem examination showed the following conditions: The neck was enlarged and presented a circumference greater than normal; the swelling of the neck was not caused by enlargement of the thyroid body, and there was no ecchymosis or wound, as a result of pressure from the fingers. Incision showed that the vessels of the neck were partly dilated, and a very great quantity of blood flowed from the thyroid vessels, which were tense and congested. The whole respiratory apparatus having been removed, the following lesions were noted:—

1. Œdema of the uvula, which was as large as a small walnut.

2. Œdema of the epiglottis, which was the shape of a large cork; and the same condition was manifest in the aryteno-epiglottic folds and intra-ventricular space.

3. Contraction of the orifice of the glottis, evidently caused by the excessive hypertrophy of the epiglottis.

4. Finally, on incising the superior face of the epiglottis, pus in volume equal to a small walnut escaped.

5. The cartilages were neither fractured nor necrosed.

A frothy and sanguinolent fluid occupied the trachea and the calibre of the greater bronchi; the lungs were hyperæmic and livid; the cavities of the heart were filled with clots; and the patient had died from mechanical asphyxia—sufficiently explained by the lesions above enumerated.

On consulting the relations of the deceased, it was learned that he smoked and drank to excess, and had had the *voix enrouée*, and accordingly was afflicted with alcoholic laryngitis. The inflammation of the various portions of the larynx was therefore not recent, and the œdema of the tissues, if not the abscess revealed by the autopsy, dated back many weeks, and possibly months. The inflammation was increased by the singing, shouting, and quarrelling, and the sudden passage from an overheated room into the cold and damp atmosphere of the street explained the increase of œdema. The prisoner consequently was released, all the circumstances failing to justify placing the responsibility for the death of the patient upon the choking done by him.—*L' Union Médicale*, June 25, 1885.

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Irrigation of the Stomach in Ileus.

Delprat, in *Nederl. Tijdschr. vor Geneeskunde*, 1885, No. 13, reports two cases of ileus treated by irrigation of the stomach, in the clinic of Professor Pel. The first, a young man aged twenty-eight, had for some time difficulty in defecation, with its final failure, which, when he was first seen, had persisted for four days. Pulse was small and frequent. Persistent hiccough. Movement of the distended intestine was perceptible through the abdominal wall, and vomiting of thin fluid fecal matter was present.

Treatment for two days with opium and enemata was without effect.

Irrigation was then tried and gave immediate relief, the distension of belly at once diminishing, and the vomiting and hiccough ceasing. During three successive days irrigation was practised seven times. The fourth day, no movement of the bowels having occurred, and the belly being still distended, and the pulse having become smaller and more frequent, laparotomy was performed in the right meso-

gastric region. No cause of constriction was found, but the inflated intestine was sutured in the abdominal wound and opened. The night succeeding the operation flatus and liquid feces passed per rectum, and on the third day there was a copious alvine discharge. The patient recovered.

The second case was a woman aged thirty-seven years, who for some time had been treated for pain in the stomach and very difficult defecation, for which enemata were given. After the patient had been treated two weeks symptoms of intestinal occlusion supervened, and a few days later stercoraceous vomiting took place.

During three days, in which abdominal irrigation was made, there was cessation of the stercoraceous vomiting, but neither flatus nor defecation was present.

Soon after the use of the stomach-syphon a tumor made its appearance in the ileo-cæcal region.

Laparotomy was performed by Professor Tilanus, and the tumor was found almost entirely to occlude the lumen of the intestine. Resection of the cæcum and small intestine was performed, and was followed on the fifth day by death from perforating peritonitis.

Delprat concludes the report with the remark that, since improvement in each case took place from the irrigation, it should in all cases of ileus be a first resort, and further remarks that where this measure fails laparotomy may still afford means of relief.—*Centralbl. für Chirurgie*, August 1, 1885.

The Physiology of Hepatic Colic.

N. P. SIMANOWSKY (*Zeit. Klin. Med.*, Band V.), with the aim to elucidate the physiology of hepatic colic, has recently undertaken a series of experiments upon dogs.

He first established a biliary fistula and afterward submitted the gall-bladder to different forms of irritation. As a result of his experiments, the following conclusions were reached:—

1. The introduction of electrodes or of any other foreign body into the gall-bladder produces violent pain.

2. When the electrodes are introduced or withdrawn, pain, similar to that caused by spasmodic contracture of the walls of the gall-bladder, is produced.

3. The pulsations of the heart are increased in frequency under the influence of feeble electric currents. They are diminished by strong currents and the cardiac rhythm is disturbed.

4. When the electrical stimulation is maintained for a considerable period, the cardiac actively diminishes. Under the same conditions the same effect is observed with feeble currents.

5. Electrical excitation increases the frequency of respiration (twenty to seventy respirations per minute). Strong excitation causes a momentary arrest of respirations.

6. The rectal temperature is elevated during excitation. There is no relation between this effect and violent movements on the part of the animal.

7. The temperature of the skin taken at symmetrical points of the body presents great variation under such excitation of the gall-bladder, being frequently elevated on one side and depressed on the other.

8. At the termination of such experiments, paresis of the posterior limbs was not infrequently observed. In some cases this condition persisted for several months.

9. Excitation of the gall-bladder frequently produced vomiting.

10. Excitation always produced increased blood-pressure, provided that the vagus had not been previously divided in the neck.—*Revue des Sciences Médicales*, July 1, 1885.

Lymphoderma Perniciosa.

Under this title Professor KAPOSI, of Vienna, has lately described in detail a case of what he believes to be a hitherto undescribed form of skin disease. A widow, æt. 39, had suffered for more than a year from an eruption, which passed at first for universal chronic eczema. On admission to the hospital the face and hands were chiefly affected, but the skin of the scalp, forehead, face, ears, and neck was of a diffuse brownish-red color, thickened, desquamating, and with honey-like crusts here and there. In the clavicular regions, upper part of chest, and axillæ, the submammary folds were reddened more or less, and desquamating or oozing. On the abdomen and back were similar patches. The extensor aspect of the upper limbs was the seat of a certain degree of desquamation, and the skin of the wrists and hands was thickened, scaly, cracked, and oozing in places, whilst the inferior extremities were less affected. The inguinal and cervical glands were swollen to the size of nuts, and firm. No visceral disease was detected, and the temperature was normal, but violent itching accompanied the eruption. On the left thenar eminence and the flexor aspect of the forearms were to be felt in the subcutaneous tissue several firm nodules, in size from a pea to a pigeon's egg, fairly well circumscribed. From her admission till six months later, when the woman suddenly died after an acute paralysis of the left inferior extremity the day before, the nodosities steadily increased in number in the deep cutaneous and the subcutaneous tissue of the flexor aspect of the forearms, breasts, epigastrium, abdomen, face, etc. They softened and ulcerated through and became covered with crusts. The face became enormously swollen and leontiastic, and the ears stood out from the head. The spleen soon became enlarged, and a serous infiltration of the skin set in with ascites. The lymphatic glands became involved, and a progressive diminution of red blood-corpuscles was traced. At the necropsy the spleen was four times its normal size, the liver voluminous; some small nodosities were found in the lungs and beneath the pleura, and the medulla of the bones seems to have been affected. The skin and lung tumors were all of the same character, and the former apparently originated near fat lobules. They were composed of a delicate fibrillar stroma, deprived of vessels, with connective-tissue corpuscles poor in protoplasm in places where cells, resembling lymph-cells, and lymphoid nuclei occurred aggregated in extremely dense masses free in the intercellular spaces.

Professor Kaposi refers shortly to cases described as *lymphadenie cutanée* by French authors, which have been described, if we remember rightly, as preceded by eczema, but he refuses to acknowledge the identity of the affections.—*The Lancet*, August 29, 1885.

Treatment of Tape-Worms.

Dr. BÉRENGER FÉRAUD concludes a long series of investigations upon the treatment of tape-worm, with the following estimate of the comparative value of the therapeutic agents generally employed for their removal. He says: Among the remedies employed by marine physicians, calomel, sea-salt, garlic, bark of the mulberry-tree, and eucalyptus do not appear to possess any value; turpentine and *noix de coco* are too rarely beneficial ordinarily to warrant their employment.

Fern, as a remedy, merits further study, in order that its real value may be determined.

Pumpkin-seed possesses only a slight therapeutic value, though it sometimes brings about the complete expulsion of the worm.

Kousso, entirely fresh, is an excellent tænifuge, but rapidly deteriorates with age, and is thus rendered inert.

Pomegranate is, in our present state of knowledge, the tænifuge *par excellence*. The bark, obtained from a tree sufficiently young and in active growth, produces the best results. However, as it is demonstrated that the good results obtained from the use of the pomegranate-bark are due to the pelletierine contained therein, and that this principle varies with the age and condition of the bark and with the part of the tree from which it is obtained, the pelletierine is to be preferred to the bark, just as quinine is to be preferred to the crude bark of which it is an alkaloid; and furthermore, the exact dose of pelletierine can be precisely determined, a result not always possible to be attained with the pomegranate bark.

In order to obtain the complete effects of pelletierine, it is necessary to employ it according to determined rules and with certain precautions, of which the following are the principal:—

When the diagnosis of the presence of a tape-worm is established, inquiries should at once be made as to the ease with which the patient is purged. The evening of the day previous to that on which it is determined to attempt the expulsion of the tape-worm, the patient should be put upon milk diet, pure milk, bread and milk, rice and milk, eggs and milk, egg custard, or cream; and all other food prohibited, in order to have the digestive tract entirely free from all substances which can in any way destroy the efficiency of the drug. The day on which the attempt to expel the worm is to be made, the patient should remain in bed, and at 6 A. M. receive an infusion of senna, containing from 2½ to 4 drachms of the leaves in about 3 ounces of water sweetened with an aromatic syrup. At 7½ A. M., the patient will receive one-half the prescribed quantity of pelletierine, the full dose being 6 grains of the tannate. Immediately after receiving the first portion of the tænifuge the patient should recline with closed eyes, and as far as possible remain perfectly quiet, to escape nausea and vomiting. At 8 A. M., one-half hour after the first dose of pelletierine, the second portion is to be administered, and if no nausea has been experienced by the patient, it is to be followed immediately by the purgative already referred to. If, on the contrary, nausea exists, the administration of the purgative may be deferred from fifteen to thirty minutes, but *no* longer. The dose of the purgative is graduated according to the facility with which the patient is affected thereby. After its reception the reclining position is to be maintained as before advised. When the drug is beginning to act, as is evidenced in increased intestinal peristalsis, the desire to go to stool is to be withstood as long as possible. If, on the contrary, the purgative does not seem to be sufficiently prompt in its action, a purgative enema should be administered, containing 2½ drachms of senna leaves and 10 drachms of soda sulph. This injection should indeed be administered in all cases when the desire to go to stool is first experienced, inasmuch as it distends the intestine and thus renders the expulsion of the parasite more easy. In some cases Dr. Féraud introduces infusion of pomegranate-bark, about 1 ounce boiled in 6½ ounces of water till reduced to about 5 ounces, to which are added 10 drachms of soda sulph. in water sufficient to make the whole mixture equal to 6½ ounces. The effect obtained is to bathe the parasite already stupefied in the decoction of pomegranate, and the procedure is recommended as being generally advisable when the patient goes to stool. The vessel used should be of ample size and half filled with warm water, so that if the worm is not expelled entire, the part first escaping will be sustained by the water and thus be less in danger of breaking. After the first stool, examination should be made to discover whether the parasite has passed entire or remains partly within and partly without the rectum. If it has apparently passed entire, search should be made for the head.

If the worm remain partially within and partially without the anus, no attempt should be made to pull it away from the rectum, but injections should be carefully

made until they have the effect of dislodging it. Too much stress cannot be laid upon the importance of refraining from all attempts to remove it by traction. If the removal of the worm has not been accomplished, large doses of mineral purgatives are at once to be administered in order to obtain further purgation as quickly as possible. In this treatment of tape-worm it may be put down as an axiom, that if purgation is slow or insufficient there is very great risk of failure.

The impediments to success in this method of treatment may be:—

(A) *Vomiting.*

(B) *Insufficiency of purgation.*

(A) Should vomiting occur as a result of the administration of the pelletierine, a second dose should be given in an amount regulated according to the time the first dose was retained. If vomited a quarter of an hour after its injection, it should be estimated that one-fourth of the drug was absorbed, and if after a half hour that it was one-half absorbed, and so on. The degree of nervous excitement produced by the first dose should always serve to indicate whether an entire or partial dose should be subsequently administered. In no case should a third dose be given.

(B) Insufficiency of purgation should be remedied as above indicated.—*Bulletin Général de Thérapeutique*, May 30, 1885.

SURGERY.

Indications for the Extirpation of Goitre.

Dr. Josef Rotter, in a paper on the operative treatment of goitre (*Archiv für Klin. Chirurg.*, Band XXXI., Heft IV.), points out that, before the surgeon performs extirpation of the thyroid body, it is desirable that he obtain some precise and reliable indications for a procedure so difficult and dangerous. The views of surgeons on the indications, whilst agreeing in general outline, still differ on several not unimportant points. Those who have been fortunate in their experience of this operation believe it to be almost quite free from danger, whilst those who have had less success are apt to over-estimate its dangers. More than 600 cases of removal of the thyroid gland have now been recorded; and during the last three years the mortality, it is asserted, has been about 10 per cent. Although some operators have had a much lower rate of mortality, and death from the operation might possibly have been avoided in some of the fatal cases, still removal of the thyroid body cannot be regarded as a procedure that is free from danger. Unexpected and serious complications are liable to occur in any instance, and the surgeon cannot estimate the probabilities of success so closely in this operation as, for instance, in amputation of the thigh. Still, though the difficulties and dangers of the operation cannot well be over-estimated, the surgeon must take into consideration the fact that the subject of goitre is exposed to many serious dangers, particularly that of very sudden and alarming attacks of dyspnœa.

Dr. Rotter holds that it is the duty of the surgeon to undertake extirpation of the enlarged thyroid body under any of the following circumstances: If the tumor have caused any attacks of extreme dyspnœa, this is a clear indication for the performance of the operation. It should be undertaken also if the goitre have caused such disturbance of breathing as to render the patient incapable of attempting any active bodily exertion. If, in a case of rapidly enlarging goitre,

the iodine treatment have failed, and the disturbances caused by the tumor have not been thus relieved, the surgeon should, without waiting for any attack of severe dyspnœa, strongly urge an early operation. In case of large goître of long standing, alterations of the trachea are likely to take place, which may place the patient's life in danger before the operation, and afterwards may complicate the healing process. A fourth indication is presented by serious difficulty in deglutition. Finally, there are cases in which the operation, though it cannot cure the patient, may relieve him of some condition that renders life intolerable; such, for instance, as those of an incurable thyroid fistula and of a goître which, by its great size, prevents the patient from pursuing his occupation.

The existence of a suffocating goître is naturally no contraindication, but rather an absolute indication for extirpation. On the other hand, under the remaining circumstances, the surgeon should hold his hand when the patient presents an unfavorable general condition which cannot be attributed to the disease of the thyroid body. In the case of any associated morbid condition which is clearly due to the presence of the goître, this restriction is not to be observed. A calcified and fixed goître should not be interfered with, except in the presence of some pressing indication. Recent improvements in operative methods have rendered possible the extirpation of very large and broadly based goîtres.

In the opinion of Wölfler and Higguet, extirpation of the thyroid should not be performed on patients above the age of 60. Liebrecht, however, reports that the three oldest patients on whom he operated, and who were between 60 and 70 years of age, all recovered. In the tables collected by the author of cases under Professor Maas and others, it is shown that of twelve persons above the age of 60 on whom strumectomy was performed three died, but the fatal result was due in one case to septic poisoning, and in another to hemorrhage, causes which certainly are not peculiar to old age. The third patient died from pneumonia on the twenty-first day from that of the operation. Advanced age, therefore, cannot be regarded as a contraindication of the operation. Liebrecht advises that the operation should not be performed on any subject with extreme atheroma of the vessels. Dr. Rotter, however, alludes to a case in which, though the patient was affected with this condition in a high degree, the operation was not followed by hemorrhage or any other complication.

In considering when it is necessary to perform total and when only partial extirpation of the thyroid body, Dr. Rotter states that the minor operation should be applied to those cases in which but one lobe is enlarged, and this affected lobe is connected with a healthy portion of the gland by a thin and narrow pedicle. In regions where goître is endemic the extirpation should always be total, in order that relapse may be prevented. It has been proved by the tables of Wölder and Liebrecht, that partial is not less dangerous than total removal. Dr. Rotter does not share the view of Kocher and Reverdin with regard to the so-called cachexia strumipriva as a special danger after total removal. The symptoms of this cachexia, it is held, are marked by the unmistakable impress of cretinism. This condition of cachexia, according to H. Bircher, occurs as a consequence, not of absence of the thyroid body, but of a chronic general condition, which causes in its first stage the development of goître, and, in its second stage, symptoms of cretinism. The subjects of excision of the thyroid body become cretins, not because the gland has been extirpated, but because they remain in districts where goître is endemic, and expose themselves to further infection. Rotter also takes this view, and therefore does not regard the so-called cachexia strumipriva as a contraindication of total extirpation of goître.—*London Medical Record*, July 15, 1885.

Diaphragmatic Hernia in an Adult.

M. A. CAYLA, at a meeting of the Société Anatomique, held November 21, 1884, presented specimens taking from an adult patient in whom existed a diaphragmatic hernia.

The man was thirty-two years of age, of good constitution, and a worker in lead, but showed no symptoms of lead poisoning.

On being admitted to the Hôpital Dieu he related that five days previously he was seized, while lifting a heavy piece of metal, with a violent pain in the left lower side of his chest. Notwithstanding the pain he continued work, and even ate his dinner, without discomfort. Two hours subsequently, however, he was seized with violent vomiting accompanied with great pain in the epigastrium.

The patient further stated that six years previously he was suddenly seized with vomiting and constipation, and that these symptoms had been regarded as the result of lead poisoning.

Examination now made failed to discover the cause of the symptoms. Palpation gave no evidence of internal obstruction, and hernia did not exist.

The belly was retracted, and painful to pressure in the epigastrium. The condition of the patient gradually grew worse, and he died in collapse three days after admission to the hospital.

Post-mortem examination. The small portion of the abdominal cavity occupied by intestines first attracted attention. The liver occupied the entire epigastric depression. The stomach was not visible, and on raising the liver it was still undiscoverable. The greater omentum was massed below the inferior border of the liver, and beneath the diaphragm was found an omental mass which concealed a hernia of this organ, through which the stomach had passed into the thoracic cavity.

Examination made of the thorax revealed the following conditions:—

The entire stomach, much dilated, and almost filled with liquid, occupied the left thoracic cavity, the lung of which side being crowded into the upper portion of the thoracic cavity.

The cardia and pylorus were situated in the abdomen. At the level of the hernial orifice the stomach was twisted upon its axis, so that a finger with difficulty could be introduced into the ring, and the hernia reduced.

The stomach at the seat of the stricture was of a darkish-red color, and upon its greater curvature there was a loss of mucus and muscular tissue, together with small superficial erosions. The œsophagus was not dilated. The orifice in the diaphragm was circular, and situated in the fleshy portion of the muscle between its left and middle leaves.

The peritoneum seemed to be directly continuous with the pleura, and no envelope of the stomach constituting a hernial sac was present.—*Le Progrès Médical*, August 8, 1885.

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Splenotomy in Leukæmia.

BIZIEL, in *Przeglad lekarski*, 1885, No. 14, records the following case of splenotomy in leukæmia, in which the operation was performed by Dr. Rydygier. The patient, a woman aged thirty-one years, had noticed for two years a tumor in the right hypochondrium. The swelling rapidly increased, and, through its size, occasioned considerable annoyance. Examination showed the existence of pronounced leukæmia. In view of the great risks incurred in splenotomy the patient was persuaded to postpone the desired operation. At the end of ten months the patient returned, insisting upon removal of the organ because the pain caused by the tumor had constantly increased, and was no longer endurable. The

spleen was now more than twenty inches long, hard, and slightly movable; and the proportion of white blood-corpuscles was considerably increased. The condition of the patient was such that she was unable to walk or stand, and during the last months she was compelled to keep her bed. Dr. Rydygier now consented to operate, and on October 3, 1884, performed splenotomy.

The abdominal wound bled more profusely than is common. The spleen was removed with comparatively little difficulty. The pedicle was tied with elastic and silk ligatures, and in order to prevent the slipping of the ligatures a small portion of the spleen was left at the hylus. The abdominal wound was closed and corrosive dressing applied. The temperature rose on the day of the operation to 103.1° Fahr., and the pulse was weak and 136. On the following day the temperature fell to 101.3° Fahr. and the pulse to 120.

The patient died from weakness twenty-four hours after the operation. Death resulted from the hemorrhage from the abdominal incision which was caused by the defective coagulation of the leukæmic blood. The ligature of the pedicle was firm. Of 20 splenotomies performed in leukæmia only 1 (operated on by Franzolini, and not certainly a leukæmic tumor) recovered, and Dr. Biziel justly concludes that ooprative interference in tumor of the spleen of leukæmic origin is not indicated.—*Centralbl. für Chirurgie*, July 18, 1885.

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The Pathogenesis of Umbilical Fistulæ.

J. CASTEL (*Thèse de Paris*, No. 56) classifies umbilical fistulæ, according to their origin, under the following heads:—

1. Fistulæ consecutive to an inflammatory process of an acute nature, such as suppurating peritonitis determining an abscess at the level of the umbilicus, puerperal peritonitis, the idiopathic peritonitis of infancy (Gauderon), and perforating peritonitis of Féréol.

2. Fistulæ consecutive to chronic phlegmasia of the peritoneum, *i. e.*, tubercular peritonitis, hydatid cysts, etc.

3. Entero-umbilical fistulæ (hernial, or diverticular, or fistulæ resulting from the presence of foreign bodies, or entozoa).

4. Umbilical fistulæ of hepatic origin (*i. e.*, caused by biliary calculi, hydatid cysts, or abscess of the liver).

5. Urinary fistulæ consecutive to persistent permeability of the urachus, some forms of which are congenital, and owing to which the patient may or may not be prevented from voiding his urine by the natural channel through a defect in the conformation of the parts, while others occur in the adult at a greater or less interval after birth, as a result of permeability of the urachus, and a consequent obstacle to the course of the urine.—*Revue des Sciences Médicales*, July, 1885.

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Laparotomy in Cases of Perforative Peritonitis.

Prof. M. OBERST, of Halle, in a paper on a case of perforative peritonitis treated by laparotomy (*Centralbl. für Chirurg.*, No. 20, 1885), states, with regard to the operative treatment of acute septic peritonitis, that a favorable result from incision, antiseptic cleansing, and drainage can be expected only in cases in which either the infective focus has been localized through adhesive inflammation, and a more or less circumscribed abscess has been formed, or when, with diffuse peritonitis, operative treatment has been applied early, and before the formation of extensive adhesions between the coils of intestine. In most cases, however, of acute septic peritonitis, it is difficult to make out whether the inflammation be diffused or circumscribed, and in the latter case there would be a risk,

in the performance of laparotomy, of breaking down the adhesions by which the infective material is confined. In acute peritonitis, due to intestinal perforation, the diagnosis is not, as a rule, attended with any special difficulty. Acute peritonitis sets in with unmistakable symptoms, and experience teaches that, with treatment of an expectant character, or applied simply to symptoms, death almost invariably ensues, as a result of diffused inflammation of the serous membrane. It is thought that, by performing an early laparotomy in cases of this kind, and by washing out the peritoneal cavity, and closing the wound in the intestine, many a life that would otherwise be surely doomed might be saved. A successful instance of such treatment has been recorded by Mikulicz. The patient was a man, aged 40, who, during a rapid movement, was seized with pain in the abdomen, and very soon afterwards presented symptoms of ileus and peritonitis. Seventy-two hours after the occurrence of the first symptoms, Mikulicz performed laparotomy, and found in the abdominal cavity nearly two pints of fetid pus, and some undigested pieces of potato. A perforation, about six centimetres in length and four centimetres in breadth, was found in the ileum. The margins of this were cut away, and the opening then closed by a dozen silken sutures. The peritoneal cavity was carefully cleansed, and the external wound closed by sutures. The perforation in this case had occurred, Mikulicz thinks, at the seat of a typhoid ulcer.

The case recorded by Professor Oberst is one which commenced in strangulation of an old scrotal hernia. The patient, aged 48 years, was admitted into the hospital at Halle on the fourth day, and then was much collapsed, and presented symptoms of intense peritonitis. Herniotomy was at once performed, but it was found that the sac, which was much distended by turbid and fetid fluid, did not contain any intestine. On opening the abdominal cavity by an incision which reached as far as the umbilicus, a considerable quantity of purulent fluid was set free; and the intestines were found much distended, and covered by a thick deposit of recent inflammatory lymph, by which adjacent coils were glued together. After a prolonged search a small orifice, from which exuded fecal fluid, was found in a loop of intestine deeply secluded in the abdominal cavity. The intestine was completely divided at the seat of this lesion, and the two ends fixed by sutures to the margins of the external wound to form an artificial anus. The cavity was then washed out with a warm solution of salicylic acid, and the inflammatory deposit scraped away from the surface of the intestines. After several drainage-tubes had been inserted into the peritoneal cavity, the external wound was closed by sutures. The patient rapidly recovered from the collapse, and during the first two weeks after the operation progressed favorably. Subsequently he became very weak, and in the ninth week died from extreme exhaustion, the fatal result having been accelerated by hypostatic pneumonia and the effects of decubitus.—*London Medical Record*, Aug. 15, 1885.

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Successful Case of Laparotomy for Intestinal Obstruction.

Dr. Joseph B. Heald reports a case of successful operation in a man twenty-five years old, for intestinal obstruction, apparently resulting from a severe fall. After the accident, constipation occurring, the patient without advice took Epsom salts to relieve the condition, with the result of producing great discomfort and pain, though at the same time causing a slight movement of the bowels. Three compound cathartic pills taken later failed to produce any result whatever. Three days after the accident Dr. Heald was called to see the patient, who, failing to be relieved by large enemata of water and hypodermatic injections of atropia and morphia, consented to operation as affording the only prospect of recovery. The operation was performed by Dr. John C. Irish as follows:—

The patient being under ether the abdomen was opened in the median line by an incision seven inches long, reaching from the umbilicus to the pubes. Owing to the tense condition of the recti muscles, the incision was extended an inch above the umbilicus, and the left rectus muscle was divided at the left of the umbilicus.

We could learn nothing from inspection with the bowels *in situ*, on account of the extreme distension of the intestines from accumulated gas; nor could anything be ascertained by sense of touch with the hand in the abdominal cavity. Therefore the intestines were rapidly but carefully drawn out until about fifteen feet of them lay upon the abdomen, when sharp resistance was felt and the increased congestion of the intestines showed the constriction was reached. Dr. Irish then passed his hand into the abdominal cavity and withdrew the invaginated portion and relieved the obstruction.

At the location of the intussusception, which was ileo-cæcal, the bowel was intensely congested and somewhat darkened in hue. The invaginated portion, about three inches in length, was thickly studded with deposits of lymph. . The congestion extended up the ileum only a few inches above the obstruction. The remainder of the small intestine appeared to be free from any inflammatory action. It was, however, greatly distended with gas, and in the lower portion of the ileum near the site of the invagination the distension had become very great. The colon was free from congestion and flaccid.

Up to this time the bowels outside the abdomen had lain perfectly quiet and dormant; but when the constriction was relieved, there was a sudden rush of gas, and the peristaltic action of the intestines started up, and gas escaped from the anus together with a large, thin, feculent discharge. The intestines were replaced with comparative ease, and the incision closed with silk sutures and adhesive straps. There was profound shock during the manipulation of the bowels, though the time of exposure was not more than five minutes. Our hands were washed in a five per cent. solution of carbolic acid, and the instruments and sponges were immersed in a solution of the same strength. The wound healed throughout by primary union. Stitches were removed on eighth and ninth days, and patient sat up on fourteenth day.

On the third day after the operation only did the temperature of the patient exceed 100° degrees F., at that time reaching 101°.

Dr. Heald believes this to be the first reported case in America of laparotomy successfully performed for intestinal obstruction.—*The Boston Medical and Surgical Journal*, September 3, 1885.

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Umbilical Hernia. Operation after Seven Days' Incarceration.

Dr. W. GELLER reports a case of umbilical hernia in which operation was performed seven days subsequent to incarceration, June 6, 1885. Dr. Geller was called to the patient, a woman who had already been confined to bed for three days. The first symptoms were severe pain in the abdomen, accompanied by constipation and violent vomiting. The patient was 46 years old, and had borne six children after normal pregnancy, but during the seventh pregnancy she aborted, since which a small swelling in the umbilical region had been present. She, however, had until the present time experienced no inconvenience therefrom. The patient was disposed to constipation, and sometimes, though seldom, three or four days elapsed without movement of the bowels. On June 2 she experienced pain in the umbilical region, and extending to the pit of the stomach, apparently as result of a cold.

Vomiting, also, soon came on, and occurred with the advent of each attack of pain. Constipation next became established, and persisted in spite of all

efforts to relieve it. Flatus in the mean time was absent, and hiccough still further complicated her condition.

Examination showed the face of the patient flushed and anxious, respiration frequent and superficial, but nothing abnormal could be detected in the condition of the thoracic viscera. The abdomen was much distended, painful on palpation, and tympanitic on percussion.

In the region of the umbilicus a tumor was present, round, and the size of an apple, hot to the touch, and extremely painful. The pulse was 120, temperature 100.4° F., respiration 36. Diagnosis incarcerated umbilical hernia.

The treatment was morphia with aq. laurocerasus, and warm baths, during which attempts were ma le to reduce the hernia by taxis. No success attending the treatment, a consultation was called with reference to the advisability of operation, and the conclusion reached that it was unadvisable.

June 7, the condition of the patient remaining the same, the preceding treatment having been continued, the patient urging operation, a second consultation was called, with the same result as that of the previous day. The treatment then pursued was morphia as before, with fragments of ice, cold applications, and copious injections. The condition, nevertheless, persisted unchanged, and now after more than seven days the family of the patient, notwithstanding the dissent of the consulting physicians, insisted on operation. Strange to say, in spite of the long incarceration, the intestine, though of an intensely violet color, showed no sign of gangrene. The operation was conducted with the greatest antiseptic precaution.

The hernia was composed of about five inches of the intestine, with scarcely any fluid. The incarceration was caused by the umbilical ring, which was so small as to fail to admit the end of the little finger, and dilatation therefore was made by a catheter, after which the introduction of a finger was possible.

After careful inspection and cleansing, the intestine was replaced. The greater portion of the hernial sac was removed, and after the introduction of a suture and application of a bandage the patient was put to bed and laudanum administered internally. Three hours later there was passage of flatus, and also movement of the bowels. The patient was in good condition, and lamented the postponement of the operation. The only unfavorable manifestation during convalescence was sloughing of the edges of the external wound. This, however, did not prove serious, and on the 20th of June the wound was entirely healed.—*Wiener Med. Presse*, July 19, 1885.

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Hydronephrosis or Omental Cyst.

At a recent session of the Society of Russian Surgeons a female patient was shown who had been admitted into Professor PELYOHIN'S clinic with a huge tumor on the right side of the abdomen. The greatest circumference of the abdomen was ninety-five centimetres. The patient noticed the tumor seventeen years ago, it being the size of a fist. Afterwards it gradually became larger. Examination showed the existence of a tumor in the neighborhood of the right kidney, which on percussion gave a dull note, this dulness being continuous with that of the liver. Nevertheless, it was evident that the tumor was independent of the liver. It was slightly movable. The diagnosis lay between hydronephrosis and an ovarian tumor. The apparent connection with the uterus favored the latter view. The operation was performed on March 12th. When the peritoneal cavity was opened a cystiform tumor appeared, invested with a membranous formation, the vessels of which ran parallel to one another. No connection was found between the tumor and the uterus. Having divided the investing membrane, the tumor itself was opened, and it presented an immense cavity into

which the hand when inserted penetrated as far as the diaphragm. In the upper part of the tumor a contraction existed, through which, however, the hand passed easily. No remnants of renal tissue could anywhere be discovered. Part of the tumor was excised, the remainder of the wall sewn to the peritoneal wound, and the cavity plugged with iodoform gauze, which was subsequently replaced by corrosive sublimate dressing, as the patient began to show symptoms of iodism. On examination, the liquid from the tumor, the quantity of which was 1000 grammes, was found to contain urea in almost the same proportion as that in which it exists in urine. Subsequently no urea was found in the secretion of the remaining portion of the tumor.

Professor Pelyohin, in his remarks on this case, said he was inclined to think that the tumor was not a hydronephrosis, but an omental cyst. In favor of this view were: (1) the number and disposition of the vessels; though most of those in the membranous investment were parallel to one another, some of them presented another arrangement, being interlaced with the parallel ones; (2) the laminar character of the structure; (3) the possibility of penetrating up to the diaphragm; (4) the constriction in the cavity, which might be the foramen of Winslow; and (5) the presence of depressions in the posterior wall of the cavity, this feature being peculiar to the peritoneum, which forms various protrusions.—*The Lancet*, August 29, 1885.

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Traumatic Rupture of the Urethra; Urinary Infiltration and Recidivous Fistula

At a meeting of the Société de Chirurgie de Paris M. TERNIR read a report upon a paper of Dr. Cabadé, with the above title. The patient was a boy aged thirteen years, who, from a height of about ten feet, fell astride the ends of the staves of a headless barrel. M. Cabadé discovered swelling of the perineum, especially at the peno-scrotal junction, no appreciable fluctuation, but great pain upon touch, and slight ecchymoses. The scrotum was clammy and the penis in a state of semi-erection; no blood at the meatus. The bladder was full, and in efforts to urinate a few drops of blood escaped from the urethra. Temperature 99.5° F. Treatment, rest and application of cold compresses upon the perineum. The succeeding day after an uncomfortable night the symptoms were all aggravated. Retention of urine absolute; the scrotum, as well as the penis, was œdematous. The parents of the boy refused to allow deep perineal incision to prevent infiltration of urine, and accordingly only scarification was practised. The day following the perineum was livid and gangrenous in appearance. The scrotum was œdematous and dark, and the thighs were also the seat of an œdematous infiltration. Deep perineal incision was now practised, and a sanious fluid mingled with urine escaped. Two additional incisions were also made in the livid and indurated scrotal tissue.

By this treatment the general condition of the patient was improved, the urine draining off freely through the incisions, though considerable œdema of the prepuce still persisted. Five days after the accident, attempt to catheterize the bladder failed. A second attempt also was unsuccessful. A third effort, one week subsequent to the accident, with an olive-pointed bougie, was successful, but, on account of the pain produced, was necessarily withdrawn. Subsequently the patient was anæsthetized, and catheterization attempted, but unsuccessfully, both by the urethra and perineal wound. M. Cabadé at this examination found that the urethral canal was divided, so that the sound, after having passed through the penile portion of the urethra, refused further progress. At this juncture of the examination it became necessary to desist, owing to trouble of respiration due

to the chloroform. At a subsequent examination entrance was made into the bladder with a probe by observing the point in the perineum at which urine escaped during efforts of micturition. A bougie was then introduced, and over this a catheter open at both ends. The sound thus introduced was exposed in the perineum for a distance of two-thirds of an inch. It was retained two days, withdrawn and replaced for four days, when an intense urethritis again necessitated its removal. However, at this time, the perineal wound was nearly cicatrized, and urination in great part accomplished by the penile portion of the urethra. Catheterization was performed daily with a No. 15 bougie (French scale). In May, 1884, M. Cabadé was again called to see the child, who for some time had been under the care of his parents only. Catheterization, which had at first been easy, gradually becoming more difficult, had been at length abandoned, and, from the rapid narrowing of the urethra and the consequent dilatation, a urinary pocket was formed in the perineum. This sac M. Cabadé incised, catheterization being impossible, with immediate relief to the child.

In the beginning of June, 1884, after preparatory dilatation of the perineal fistula with sponge, the procedure above detailed was repeated. The operation again was temporarily successful, though finally catheterization again became impossible, and the perineal wound was reopened. The patient at about the same time was attacked with acute tuberculosis, which proved fatal in sixteen days.

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The Treatment of Patients affected with Disease of the Prostate.

Dr. Guyon, holding that the normal physiological condition of those affected with prostatic disease is congestion, formulates the following treatment for the affection:—

1. The avoidance of all causes of general or local chill.

2. The proscription of over-eating and alcoholic excess, and in general avoidance of *abuse*, rather than the simple use of salads, meats, fish, shell-fish, white wines, and champagne.

Not only should excess of irritating or alcoholic drinks be avoided, but also that of beverages in themselves inoffensive. For this reason the treatment of the affection by mineral waters should be advised with extreme caution.

3. *Voluntary and prolonged retention of the urine* should be avoided, as being conducive, in those affected with prostatic disease, to the production of retention of the urine, cystitis, etc.

4. Moderate indulgence in sexual intercourse.

5. Consideration of the unfavorable influence exerted by prolonged horizontal decubitus and immobilization.

Prolonged rest in bed should be avoided, and before retiring, the patient, if possible, should, if unable to walk in the open air, promenade in his room for fifteen or twenty minutes, and in the morning such exercise should be repeated.

During the day sedentary habits should not be contracted, but at the same time fatigue should be avoided.

Constipation should be obviated, if existing, without the use of drastic cathartics. A large enema, warm or cold, in the morning exercises at the same time an evacuating and a soothing effect. Emollient enemata, before retiring, frequently also yield good results.

6. The functions of the skin should be excited by dry friction and massage.

Baths should not be continued beyond fifteen minutes.

Dr. Guyon next considers the medicinal treatment of the affection, and suggests—

1. As a remedy for the *sclerosis* of the urinary apparatus, the use of potassium

iodide in quantity varying from eight to fifteen grains daily, during fifteen days or three weeks of every month, and continued for months or years.

2. For the *congestive lesion*, the careful administration of ergot, nux vomica, and all preparations containing strychnia as a base, is advised.

3. As remedies for *vesical irritation*, belladonna, hyoscyamus, and the preparations of valerian will be found more inoffensive than opium and its derivatives, but nevertheless sufficiently active.

The bromides are considered to have in vesical disease only an insignificant effect, but in some cases this should be utilized.

The foregoing hygienic and medicinal treatment, Dr. Guyon considers, will in most instances suffice to overcome the functional disturbances experienced by prostatics, and only when it fails should the use of the catheter be resorted to.—*Ann. des Mal. des Organs Genito-urinaires*, May, 1885.

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Resection of the Body of the Sternum for Caries.

At a meeting of the Académie de Chirurgie de Paris, held June 17, 1885, M. LEON LE FORT reported a case of resection of the sternum for caries. The patient was a man 54 years of age, who, during the years 1879 to 1885, had had several abscesses in the sternal region. The patient was exceedingly emaciated. Several fistulous orifices existed over the sternal region, with thickened livid edges, from which escaped a darkish-yellow watery pus. At each inspiration of the patient the pus appeared at and receded from the orifices, but if the patient coughed or made any violent effort great quantities of pus escaped with a gurgling noise. It was evident, therefore, that these fistulæ communicated with a large pus-containing cavity, and on trial about one ounce of liquid was injected. Examination, by percussion and auscultation, showed that there was no pleural thickening or any sign of pulmonary tuberculosis. Examination with a probe showed that the sternum was bare at the level of the fistula, and by strongly curving the sound it was introduced upon the posterior surface of the sternum, and demonstrated also an extensively denuded condition of the posterior surface. The probe did not penetrate into the pleural cavities. The patient was in a state of extreme feebleness, aggravated by the refusal of all food, and it was evident that death would speedily result, unless operative procedure should be successful.

On April 30, 1885, after having anæsthetized the patient with chloride of methyl, M. Le Fort made a double transverse incision, united by a median incision, extending to the inferior part of the body of the sternum. With a cutting spatula, the two lateral flaps, comprising the skin and periosteum, were raised, thus laying bare the anterior surface of the bone. The fistulæ, however, were not sufficiently large to permit the introduction of Liston's scissors, and accordingly the bone was cut two-thirds through by scratching with the point of the scissors. Then, by introducing a knife into the cleft so made, the bone was entirely cut through. This done, M. Le Fort cut the second and third costal cartilages on each side, by which he was enabled to raise the bone and pass his finger behind it, confirm the absence of the periosteum, and also protect the mediastinum and pericardium. The second, third, fourth, fifth, and sixth costal cartilages on each side were successively cut, and it was then possible to see that the periosteum was entirely adherent at the base of the ensiform cartilage, and at this point the bone was cut with Liston's scissors. Further examination showed the existence of diseased bone at the superior part, and this was removed. The interclavicular portion of the sternum fortunately was free from disease.

The wound made by the operation extended from the first intercostal space to the sixth. The borders were formed by the costal cartilages and intercostal

muscles; the bottom by a thickened but not soft membrane, covering uninterruptedly the mediastinal organs, and rising regularly at its inferior portion with the pulsations of the heart. The fragment removed measured four inches in length. Its anterior surface was healthy, but the deep surface was altered to some depth over its entire face.

The dressing consisted of compresses of tarlatan soaked in corrosive chloride solution of 6 grains to the quart. The immediate results of the operation were excellent, and it seems probable that recovery would have resulted had the patient partaken of food, but having become tired of life he persisted in his refusal, and died from inanition. He submitted to the operation, as was found out from a letter written to a friend, in the hope that he would die during its performance.

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The Anatomy of Spina Bifida, and its Treatment by the Injection of Iodo-Glycerine Solution.

Dr. R. W. Parker, at a late meeting of the Clinical Society of London, presented the report of the committee appointed to inquire into this subject, of which the following is an abstract:—

Before attempting to discuss the results of treatment of spina bifida by Morton's or other methods, it was thought desirable to determine more clearly than had hitherto been done the pathological conditions included under that term. With this object, the committee undertook an examination of all the specimens of the deformity contained in the London museums, as well as in those in Cambridge and Glasgow, and sundry others placed at their disposal by different contributors to this report. The subject was therefore divided into two parts: first, the pathological anatomy of spina bifida; and, secondly, the treatment of the deformity.

I. *Pathological Anatomy.*—The term spina bifida was used to define certain congenital malformations of the vertebral canal, with protrusion of some of its contents in the form of a fluid tumor. With very rare exceptions, the malformation affected the neural arches of the vertebræ, and the tumor projected posteriorly; in rare cases, however, the bodies of the vertebræ were involved, and the tumor in such cases protruded anteriorly into the thorax, abdomen, or pelvis, between the lateral halves of the bodies affected. The museum specimens were discussed under the following, or some of the following, headings: 1, position of the tumor; 2, size and configuration of the sac; 3, coverings of the sac; 4, disposition of meninges within the tumor; 5, size and configuration of the deficiency in the neural arches; 6, disposition of the spinal cord and nerves; 7, unusual variations; 8, the process of cure. The result tended to show that the specimens fell under three chief divisions: 1, protrusion of membranes only (spinal meningocele); 2, protrusion of membranes, together with the spinal cord and its appertaining nerves (meningo-myelocele); and, 3, protrusion of the membranes, together with the spinal cord, the central canal of which was dilated so as to form the sac-cavity, the innermost lining being constituted by the expanded and atrophied substance of the cord (syringo-myelocele). As to the comparative frequency of these three varieties, the committee stated that the second, meningo-myelocele, was by far the most frequent, while simple meningocele came next, and syringo-myelocele last.

As a typical example of the common variety, a specimen now in the College of Surgeons was quoted. This was a case of lumbo-sacral spina bifida, of the size of a Tangerine orange, sessile, but constricted slightly at the point of attachment. The tumor presented normal skin for a short distance round its base, but the central portion consisted of a thin translucent membrane; along its vertical

axis the tumor was slightly furrowed, this furrow corresponding to the attachment of the cord to the inner surface of the sac-wall. The spinal cord ran almost horizontally across the upper part of the sac, and then became incorporated with the sac-wall, from which also the lowest nerves arose; they then passed across the sac to gain the intervertebral foramina, from which they issued normally. The anterior and posterior roots of the nerves were separated from each other by an exaggerated ligamentum denticulatum.

Concerning simple meningocele, and cases where there was dilatation of the central canal of the cord, little was said, except that they might very easily be mistaken one for the other; for both sacs were free from nerves, and a careful dissection was often necessary in order to distinguish them. In some cases of meningocele, with a large communication with the vertebral canal, the cord could be seen lying at the bottom of the sac in the vertebral canal, and then there could be no difficulty about the diagnosis. Besides these three chief varieties, mention was made of several variations; among these, the division of the sac into smaller loculi, and the occurrence of bony outgrowths across the vertebral canal, button-holing the spinal cord, were the most remarkable.

Careful microscopic examination of the sac-wall in a typical case of meningo-myelocele had disclosed the continuation of the central nervous system within its median vertical portion, the integrity of the central canal of the cord within this part, and the absence of true skin over it. It further displayed the absence of any meningeal cavities behind the incorporated portion of the spinal cord. It was clear, therefore, in the first place, that the nerve-roots, which traversed the sac, arose from this intramural portion of the central nervous system, and that all expressions of descriptive pathological anatomy which implied a distribution of the nerves to the sac-wall were a reversal of facts. Even more important than this, the histology of the sac-wall in a typical case, by demonstrating the integrity of the central canal of the included portion of the cord, showed beyond dispute that the neural furrow did not remain unclosed in spina bifida, nor, after having been closed, was it subsequently distended by dropsy and ruptured. The absence of true skin from the central portion of the sac-wall was next adverted to. This fact implied that the mesoblastic basis of the true skin, and the structures lying in subjacent connection with it, had not been developed. The presence of the cord in the sac-wall offered no difficulty of explanation when its epiblastic origin was remembered. The theory, therefore, which best explained the pathological anatomy of spina bifida was that which assumed a primary defect of development of the mesoblast from which the structures closing in the vertebral furrow were developed.

II. *Clinical Course and Treatment of Spina Bifida.*—In order to form a correct estimate of the value of treatment by the injection of Dr. Morton's iodo-glycerine solution, the committee had endeavored to ascertain as far as possible the natural history of the deformity when untreated, and had prepared tables of cases treated in various manners for purposes of comparison. As regarded the natural history of the deformity, the Registrar-General's report for 1882 showed 649 deaths from spina bifida in England and Wales, of which 612 occurred under one year of age. The committee held that, though a certain number of these deaths were due to local causes—rupture of the sac, draining away of the cerebro-spinal fluid, and subsequent septic meningitis—yet in a large proportion of the cases death ensued from the marasmus and general defective nutrition frequently associated with the deformity, and which could not be remedied by any local or other treatment. The tables next dealt with treatment by injection with simple solutions of iodine, and showed a considerable amount of success. Then ligature of the sac was considered, and here again good results

seemed to have been obtained. Excision likewise had a considerable proportion of success. The plan of repeated tapping and pressure gave the least successful results of any. The injection of Morton's fluid, according to the committee's tables, showed a percentage success of between 50 and 60. The high mortality was thought to be, in unsuitable cases, largely due to the treatment having been adopted on account of its simplicity and supposed safety. In spite of the favorable results of ligature and excision of the tumor as shown in the tables, the committee felt themselves compelled to report against these methods of treatment. There was reason to think that the published cases might be misleading, owing to some cases of failures not being recorded, while all the successes, being regarded as surgical triumphs, were almost certain to have been recorded. Moreover, it seemed probable that a careful selection of cases had been made. The committee, therefore, advocated the plan of treatment by injection—and preferably by the injection of Morton's fluid.—*British Med. Journ.*, May 30, 1885.

Treatment of Hydrarthrosis by Localized and Forced Compression, by Wadding and Bandages.

In an original memoir on the treatment of hydrarthrosis by means of localized and forced compression, by wadding and bandages, Dr. DELORME thus describes the method of applying the dressing to the knee. We begin by cutting a piece of wadding sufficiently long to extend beyond the foot, and reach above the middle of the thigh. The wadding, which should be moderately thick, is then lightly shaken to remove all folds, and to render it pliable and soft. The leg is then raised to remove the engorged venous blood and the cotton applied; all superfluous parts having been removed and the edges thinned, so that when overlapping they together shall be uniform in thickness with the remainder of the wadding. The limb still elevated the foot is covered with a Bauden's bandage of new linen carefully applied without folds or wrinkles and with sufficient firmness. The pressure thus made should gradually diminish from the toes to the instep. With the same care the wadding is exactly applied to the leg by circular turns and reverses until the condyles of the tibia are reached.

Having arrived at this point the bandage is laid aside until there is applied to the knee a roll of wadding having a diameter of a clenched fist and of the shape of a horseshoe, whose opening is in relation with the extremity of the limb and whose curvature embraces the base and sides of the patella. The form and dimensions of this pad enable it to adapt itself to the portion of the limb occupied by the subtricipital cul-de-sac and the lateral synovial prolongations, and to exercise pressure at their level. This pad is now held firmly in position by circular turns, from below upward, of the bandage already applied as far as the condyles of the tibia. Oblique turns of the bandage are then applied so as to embrace exactly the whole superior portion of the tampon, and fix it against the upper portion of the synovial cul-de-sac. When a sufficient number of oblique and circular turns have been taken, so that by somewhat firm pressure between the thumbs and fingers of both hands indentation is accomplished with difficulty, the bandaging is considered sufficient, and the operation concluded by fixing the wadding on the lower portion of the leg with additional circular turns.

In order to prevent the slipping of the bandage, Dr. Delorme places the limb in a trough and envelops the whole by a towel extending from foot to thigh. Most frequently the limb is placed in an upholstered trough, and the lower portion of the limb allowed to rest on two transverse horsehair pads, very thick and firm. Ordinarily, immediately after the application of the bandage, the toes become cold and assume a red tint, and sometimes a livid hue which commonly disappears after a few hours, and frequently passes away in twenty-four hours without the

least inconvenience. Slightly increased elevation of the limb, compression of the toes, and slight pressure upon the wadding around the knee, suffice to remove the local stasis. A few hours after the application of the apparatus, and especially at night, pain and cramp of the calf of the leg appear and require the administration of opium or morphia. The day succeeding the application of the bandage, if owing to the disappearance of the effusion the dressing has become less firm, additional turns of a roller should be applied until the dressing attains the same degree of firmness it originally possessed.

This treatment is persisted in until the eighth or tenth day if the disease is acute, and until the fifteenth day if it be chronic, hydrarthrosis.

In a *résumé* of his observations upon the application of the foregoing treatment, Dr. Delorme holds it to be especially applicable in the following cases:—

1. In acute hydrarthrosis, one or several days after its initial symptoms, localized compression has a most favorable influence. In eight or nine days we have commonly found swellings of the knee of rheumatic or traumatic origin to disappear, but, in some cases, this has occurred even sooner. In one case in which there was considerable hydrarthrosis of the knee, combined with slight contusion of the joint, was observed on the removal of the dressing on the fifth day (and after the fifth day observation has shown that it is scarcely necessary to renew the bandages) an entire or almost entire disappearance of the exudation. But as it is difficult to replace any appliances once removed, and as it is frequently necessary to apply an entirely new dressing, it is advisable not to interfere with the limb until a few days beyond this limit. On the contrary, after the removal of the first apparatus on the eighth day, it was necessary in some cases to apply a second, which was left in position for five or six days. However, the point to be remarked is that no cases of acute hydrarthrosis which have come under notice have proved refractory to the treatment proposed, that they have always disappeared in a very short time, and that with one exception no return of the affection has been observed. In chronic hydrarthrosis the disappearance of the effusion was accomplished almost in the time indicated, but the consecutive treatment was continued longer. Although those suffering from acute hydrarthrosis may be discharged toward the end of the first month, those having chronic hydrarthrosis of the knee are retained two months, during which time a sufficiently firm pressure is maintained upon the joint in connection with faradization of the anterior muscles of the leg.

2. Swellings of the knee observed during the course of blennorrhagia are, as is known, very refractory to all therapeusis, while, on the other hand, it is necessary to cause their speedy disappearance in order to avoid articular rigors and anchylosis. Observation seems to demonstrate that the method under consideration causes exudations of blennorrhagic origin to be observed almost as rapidly as traumatic or rheumatic effusions. One of two cases treated was affected with blennorrhagic arthritis of both knees, and for nearly a month was treated without success by simple immobilization, flying blisters, and all other means commonly employed. The exudation was considerable and the pain severe. Firm localized compression in six days caused the swelling on both sides to disappear.

3. In many cases of army practice we were able to apply the treatment at the moment of an accident, after a fall upon the knees, a shock received upon an articulation, a twist of the knee, in a word, after traumatisms which were sufficient to cause swelling of the joint; equally it is indicated to prevent effusion by appropriate compression. This practice, entirely rational, is commonly employed in veterinary medicine, with race-horses, to prevent synovial effusions in the sheaths of the tendons.

4. *Hemorrhagic hydrarthrosis*, which complicates fractures of the patella, interposes such an obstacle to the coaptation of the fragments that most surgeons

to-day seek to remove the exudation before treating the fracture. Compression and puncture have been employed without result. The first is censurable, as ordinarily employed, from the fact that it produces tardily the desired result, and diminishes the chances of a bony union. The second, much the more sure, is perhaps not so harmless as its partisans hold. The method now proposed, in view of its results, Dr. Delorme considers the safest and least objectionable, and at the same time the most successful.

5. The rapidity with which localized compression causes the disappearance of an effusion may perhaps be utilized as a means of differential diagnosis in certain cases where doubt exists as to whether the swelling is due to chronic hydrarthrosis or white swelling. Although the latter is relatively little amenable to the influence of compression, the first on the contrary disappears rapidly.

In conclusion Dr. Delorme calls attention to the fact that in diseases of the joints treatment is never to be considered completed (especially in hydrarthrosis) as soon as the swelling has disappeared, and advises—

1. The continuance of a conservative compression as a safeguard against return of the disease.

2. Immobility of the joint to prevent excessive secretion of the synovial fluid.

3. Electrization of the peri-articular muscles.—*Archives de Méd. et de Pharm. Militaires*, July 16, 1885.

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On Erasion (so-called Arthrectomy) of the Knee.

Mr. G. A. Wright, in *The Medical Chronicle* of July, 1885, describes the operation of erasion of the knee, first employed by him as a substitute for arthrectomy:—

The operation consists in opening the joint freely by a semilunar incision, just as in the ordinary mode of excising the knee; the skin is reflected and the capsule removed on each side of the patella and patellar ligament, or, if preferred, the patella may be sawn across, and the fragments turned upwards and downwards. If the former plan is employed, free incisions parallel to the long axis of the limb are made on each side of the patella, extending a little above its upper border as well as downwards nearly to the insertion of the ligamentum patellæ into the tubercle of the tibia; the object of this is to allow the patella to be freely displaced laterally, and turned round so as to expose its articular aspect during the process of erasion.

The rest of the operation consists in carefully cutting away with forceps and scalpel or scissors every particle of pulpy granulation-tissue, all the infiltrated capsule, and the semilunar cartilages, and scraping quite clean all the articular cartilage, picking out granulation-tissue from any pit in the cartilage, and, if necessary, gouging away any small spots of diseased bone. The process must be most thorough, and extreme flexion of the limb is required completely to expose and clean the posterior part of the joint; the crucial ligaments are scraped, but carefully preserved, the lateral ligaments usually divided.

The upper synovial sac must be thoroughly cleaned. The most difficult part of the operation is getting away the posterior part of the semilunar cartilages and the synovial membrane at the back of the joint.

The process is a tedious one, often lasting one and a half or two hours, including the subsequent putting up in a splint. As soon as all bleeding has been stopped, the limb is fixed on an excision splint and dressed in the usual method, antiseptically. Wood wool is the dressing preferred from its very perfect absorbent properties, and the firm even support it gives; drainage should be at the back of the joint on each side as after excision, the tubes being carried through openings made behind the joint. Mr. Wright prefers to Esmarch the limb before beginning the operation.

OPHTHALMOLOGY AND OTOLOGY.

Panotitis in Scarlatina-Diphtheritis.

Dr. OSCAR WOLF, at the close of an interesting paper upon Panotitis in Scarlatina-Diphtheritis, in speaking of the treatment, says:—

So far as the therapeutics are concerned, all those cases show us that the means known to us are not able to oppose the injurious operation of the diphtheritic exudation, even in the first few hours of the ear trouble. Masses of partially organized exudation appeared in the tympanic cavity, and that, too, in the most delicate parts; if we had now instilled a ten per cent. alcoholic solution of salicylic acid, it would have remained for the most part on the upper surface of the exudation without availing anything, even if it had really reached the tympanic cavity, while, on the other hand, if it had reached a vulnerable spot, it could have caused even a rupture of the fenestral membrane. We must, in my opinion, in such cases, refrain from attempts to influence the diphtheritic process itself, and be satisfied with emptying as quickly and completely as possible the tympanic cavity of exudation, and ought only to resort to disinfecting means that do not corrode.

By the use of pilocarpin injections in the first place we are enabled to loosen more easily and effectually the diphtheritic exudation, and at the same time the labyrinth is speedily relieved, especially by the marked increase of the secretion of the mucous membrane of the tympanic cavity. But this treatment is very much interfered with, and that, too, at the height of the disease, by the somnolence and tendency to cardiac weakness induced by it, with no inconsiderable danger to the life of the patient; one should, therefore, begin very cautiously, with very small doses of this medicine, and only after careful examination of the general condition.—*Archives of Otology*, June–September, 1885.

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Ménière's Disease.

LORENZ ECKERT, in a treatise upon Ménière's disease, reviews all hitherto published cases and articles pertaining to this pathological condition. From these and fifteen as yet unpublished cases of Burckhardt-Merian, the author attempts to draw a distinct anatomical basis for the various symptoms of Ménière's disease, and arrives at the following conclusions:—

1. The semicircular canals, with their ampullæ, are the organs of the sense of co-ordinate motion, directly for the head, indirectly for the entire body.

2. The localization of sound is determined by binaural power of hearing. The semicircular canals take no part in this, but possibly exert acoustic functions in other respects.

3. The appearance of the various symptoms of Ménière's disease is in most cases attributable to a diseased state of the terminal apparatus of the acoustic nerve in the labyrinth. It is only in rare instances that these are called forth by pathological changes in the adjoining nerve-centres.

4. Pathological changes of conditions in the middle ear and in surrounding structures, producing a change in the intra-labyrinthian pressure, may call forth a similar train of symptoms.

5. The symptoms are induced by an irritation of the labyrinthian organs or their nervous centres. Complete destruction of the same seldom calls forth a loss of function.

6. Disturbances of co-ordinate motion may be absent in pronounced chronic or acute affections of the labyrinth.

7. Constitutional diseases, such as lues leukæmia, epidemic parotitis, and tabes, are recognized factors predisposing to the development of Ménière's disease.—*Archives of Otology*, June–September, 1885.

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The Treatment of Mastoid Suppuration without the Use of the Trephine.

LŒWENBERG, at the conclusion of an exhaustive discussion of the treatment of suppuration of the mastoid cells without resorting to the trephine, expresses his views as follows:—

In the treatment of mastoid suppuration, before resorting to trephining, hitherto considered the only therapeutic measure applicable to the treatment of the affection, I advise scrupulous and patient use of the following measures, whose practice has frequently enabled me to avoid this operation, which is always dangerous, and sometimes impossible on account of the peculiar structure of the bone:—

1. In order to obtain an easy exit for pus accumulated in the mastoid apophysis, through the drum and auditory meatus—

a. Enlarge considerably the small perforation of the tympanic membrane. In cases where spontaneous perforation has occurred too high for the ready escape of pus, a counter-opening below should be made.

b. Frequently practice insufflation of air through the Eustachian tube.

c. Cleanse the diseased cavities several times a day by free and forcible injections of saturated solutions of boracic acid, or of weak solutions of corrosive sublimate.

d. Destroy vegetations or polypi if they are present either in the auditory canal or tympani cavity.

2. Institute at once energetic and careful antiseptic treatment.

In this connection abstain from the employment of all emollients, which can only conduce to the multiplication of microbes, constantly present, and begin treatment at once with a saturated solution of boracic acid in absolute alcohol, whose use has already been suggested in otorrhœa, and which I consider as corresponding to all the indications here necessary to be employed. In beginning its application the alcohol should be used as concentrated as possible, and gradually strengthened until it can be endured entirely undiluted.

3. In case of necessity open the abscess formed at the mastoid apophysis, introduce a drain, and cover the external openings with the impalpable powder of boracic acid, over which absolute alcohol should be sprinkled several times daily.

Prof. Lœwenberg adds that, having employed the measures indicated above for six years, in the treatment of mastoid disease, frequently of a serious character, he can warmly recommend its careful and patient application.

Trephining in a great number of cases is rendered superfluous, and only becomes necessary when sequestra are present, or some other vital indication exists.

The writer finally remarks that trepanning, instead of being the rule in the treatment of this affection, as many authors insist, should only be exceptionally performed, and as a last resort.—*L' Union Médicale*, August 29, 1885.

MIDWIFERY AND GYNÆCOLOGY.

Inguinal Hernia of the Right Horn of the Pregnant Uterus.

Dr. HEINRICH EISENHART, at the conclusion of a report of a case of inguinal hernia of the right horn of the pregnant uterus, in which the condition was correctly diagnosticated previous to operation, sets down the following points to be observed:—

Pregnancy, he says, must be determined to be present or absent, according to the subjective and objective symptoms presented. Whether the pregnancy is intra- or extra-uterine, or whether the pregnant uterus, tube, or ovary is contained in the hernial sac, must be determined by observation of the following points:—

1. Extra-uterine pregnancy almost never is complicated with rupture of the uterus. Of this, a single case, involved in much doubt, is reported (Skrivan and Lumpe). Moreover, it must be recollected that tubal pregnancies, which are much more numerous than ovarian pregnancies, almost invariably terminate during the first months through rupture of the containing sac, a circumstance to be considered if the pregnancy under consideration has reached the sixth, seventh, or a later month. Finally, it must be held in mind that inguinal hernia of the pregnant uterus does not belong to the catalogue of rare exceptions.

2. The form of the body present in the hernial sac, in hernia of the uterus, is similar in shape to a pear, the broadest portion being below, the smaller portion extending into the entrance of the hernial sac. This peculiarity is one by which the diagnosis may be confirmed, especially if the ovary can be felt in near relation with the tumor.

3. Vaginal examination, more certainly than all else, will permit a correct diagnosis to be made. Bimanual examination will enable a decision to be reached, that the body in the hernial sac, and that recognizable in the vagina, are one and the same, while combined investigation of the bladder and rectum will detect any deviation of the uterus from its normal position. Concerning the latter, an anomaly in the formation of the uterus may be a source of error, especially should the organ be bicornate, and therefore predisposed to hysterocele. Nevertheless careful examination will enable a correct conclusion to be reached. Introduction of the sound is only justifiable when abortion, either natural or artificial, appears unavoidable.—*Archiv für Gynækologie*, Bd. xxvi., Hft. 3.

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Eclampsia and the Albuminuria of Pregnancy.

MM. DOLERIS and POUEY, at a meeting of the Société de Biologie, held July 17, 1885. in a communication concerning the albuminuria of pregnancy and eclampsia, make the following statement of the results of their investigations:—

1. Contrary to the opinion generally accepted, the urine of pregnant women rarely contains albumen. In experimenting with women arrived at the ninth month of pregnancy, a period most favorable for the appearance of albuminuria, in some hundreds of cases, after analysis with the most sensitive reagents (that of Tanret in particular), albuminuria was found in twenty cases only.

Albuminurias observed at the beginning and during the course of labor must be disregarded.

Here, indeed, they are a little more frequently met with, but they constitute a transient accident, due to diverse causes, isolated, or temporarily united to produce such result—nervous excitation, elevation of blood-pressure, compression and sometimes contusion of the bladder by the mechanical engagement of the fœtal head, followed by extravasation of serum into the urinary reservoir.

The authors have intentionally disregarded observations on this point.

It ought not, however, to be forgotten that phenomena belonging to secret labor may appear several days before true accouchement, and that albuminuria may on this account appear during the last days of pregnancy.

2. *A.* By the careful as possible use of processes (tubes, and sterilized catheters, and heated antiseptic washing of the vulva, repeated many times, etc.), the authors collected directly by catheterization the urine of fifty pregnant women, in order to make a microscopic examination and culture in view of search for micro-organisms.

In this number were comprised but few women affected with albuminuria.

In these fifty cases they found microbes in a proportion of one to five, under the form of bacilli, and more rarely under the form of micrococci. Their presence seems to be explainable in those women the kidneys of whom were functionally normal by the existence of a vaginal catarrh, whose secretion, in spite of the precautions taken, reached the catheter. In every case in which the microbes were very abundant, such catarrh was found to exist.

B. In twenty women in whom there was albuminuria, the presence of the microbes was constant. The micrococcus under various forms peculiar to it was always present: monococcus, diplococcus, staphylococcus, and principally the streptococcus.

From the constancy of these results denial of the existence of non-microbian transitory albuminuria could not be absolutely made. However, it must be very rare.

3. As to the blood of pregnant women who have albuminuria, it appears, from the researches of MM. Doleris and Poney, that, although albuminuria is always accompanied by the presence of microbes in the urine, the condition does not imply their presence in the blood. At least culture of a drop of blood taken from the extremity of a finger has not always been fertile. From this, however, the absence from the blood of micro-organisms cannot be absolutely concluded, but it can be considered that they are rare, or localized in a region with little connection with the blood-current, in those cases in which the experiments have been negative.

4. In all cases in which albuminuria eclampsia was observed by the authors, the urine contained micro-organisms rendered evident by culture.

The blood was examined and cultivated in two cases with positive result. The authors do not take into consideration the less precise researches made in three other cases. But as to the two positive cases, the one permitted the recognition, with astonishing precision, of the progress of the affection, and an advance parallel with the microbic infection of the blood and urine. Some hours after the beginning of the convulsions, a culture of the urine and blood made in six *ballons* containing sterilized bouillon, rendered slightly alkaline, was made.

The urine contained at this time mobile points in great abundance, and the blood also contained more abundant mobile granular bodies than normal. Examination of the cultures made two days after showed the presence of the staphylococcus and abundant granular rings comprised of from 10 to 20 grains from 1 mm. to 2 mm. in diameter.

A new culture of the urine made six days after the cessation of the convulsive attacks, the urine still containing albumen, gave the same results. Six days later, when the albumen had completely disappeared, a third culture of the urine remained sterile, and negative results were maintained up to the discharge of the patient.—*Archives de Tocologie*, August, 1885.

Cysts of the Vagina.

Dr. THALINGER, in a treatise on this subject, considers cysts of the vagina—

1. As cysts of retention. This opinion can be sustained only with difficulty, inasmuch as the existence of cysts of this portion of the vaginal mucous membrane is not yet certainly demonstrated.

2. As hygromas. This view probably is supported by the greatest number of observers.

3. As cysts of the canal of Gärtner, an explanation applicable to a few instances only.

These cysts arise from mechanical predisposing causes, chief among which is accouchement, since traumatism is the only determining cause whose action is probable.

The treatment suggested as giving the best results is incision, followed by caustic injections into the cavity.

Hydroceles of the neck of the uterus treated by puncture and injection of iodine have given rise to serious accidents. In the vagina, as in the cervix uteri, the cysts are in relation with extremely vascular regions in which the reaction due to the injection is too energetic; and though some writers—Fleetwood, Churchill, and Scanzoni—employ no other method, notwithstanding their authority, the operation in every instance should be performed only after due consideration.

Thalinger further argues against the operation by puncture by holding that should the cyst be deep-seated it is difficult to reach, and it is therefore difficult to avoid injecting a great part of the caustic solution into the vagina, in which case the operation is very uncertain of success, Scanzoni himself saying that it should be repeated for six days in succession.

Having discussed the operation by puncture, M. Thalinger considers the operation by incision, which he unhesitatingly pronounces the preferable procedure.

This method is the one practised by M. Tillaux. The parts are first treated with a solution of cocaine, after which the sac is incised and injected, first with solution of carbolic acid, and then with four per cent. solution of the chloride of zinc. The incision is made without difficulty, and the only precaution to be taken is to avoid wounding the bladder or urethra in the front, and the rectum in the rear, by extending the incision beyond the walls of the cyst.

As precautionary measures, Dr. Thalinger suggests the introduction of a sound into the bladder, or the introduction of the finger of the left hand into the rectum. As a further precautionary measure, the blade of the bistoury may be enveloped by lead-plaster, and only a small portion of its cutting edge exposed.

Excision.—This method, next considered, is pronounced not "always irreproachable," because in many instances, especially in large cysts, cicatrization is not always prompt, but is frequently followed by the appearance of persistent fistulæ.—*Revue de Thérapeutique*, August 15, 1885.

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Fibroid Tumor of the Uterus—Extensive Cancerous Degeneration and Ascites in a Girl thirteen years of age.

Dr. VON KÖNIG reports the case of a girl thirteen years of age in whom, along with uterine fibroid, there were present also cancerous degeneration and ascites.

The history is as follows: The patient, whom he first saw October 25, 1884, complained of pain in the left side of the belly, loss of appetite, costiveness, and disturbed sleep. The temperature of the skin was scarcely elevated, the secretion of the urine normal and contained no albumen. The pulse was 108. The

menses first appeared in March, 1884, and disappeared in April. After this they again became established regularly, until the middle of October, when they again failed to appear. Since this time the preceding symptoms began to be developed. Examination revealed considerable abdominal enlargement, presenting the uniformly rounded appearance observed from the fifth or sixth month of pregnancy. The abdominal walls were tensely stretched and of variable resistance. On the right side was felt an underlying hard body whose limits were not recognizable on account of the tense condition of the abdominal walls. The firm spot was unyielding and immovable. On the left side the abdominal wall was elastic, fluctuating, and painful. Percussion, as far as the upper abdominal region, was tympanitic. Change in position of the body caused no variation in the fluctuation or percussion sounds. Auscultation of the abdomen revealed no signs of importance. The breast was slightly developed, flabby, and not painful. The nipples were small, and on pressure discharged no fluid. Examination made by a skilled midwife showed the vaginal orifice not closed, the vaginal portion of the uterus high up and directed slightly backward, somewhat softened and closed. No fœtus was recognizable through the vaginal walls. A later examination made by Dr. Von König revealed the same condition as above. The patient confessed to have had intercourse the middle of June. The painful abdominal symptoms soon disappeared, but the abdominal secretion increased, and in the course of several weeks a marked dropsical condition was developed. There was œdema of the abdominal cutis, genitals, and the lower extremities. The upper portions of the body were emaciated. Secretion of urine nearly ceased. The urine was dark brown, acid, and laden with the uric acid salts. The patient had continuous fever; the pulse was 120, small and feeble. There were loss of appetite, constipation, failure to sleep, and difficulty in breathing. All medication was ineffectual. Dyspnœa existing to such a degree as almost to cause suffocation puncture was made February 12, 1885. The trocar was introduced midway between the umbilicus and the spine of the ilium, and about two gallons of fluid were evacuated. The first portion of the fluid which escaped was of a brownish-red color, and the last of a whitish color.

After the evacuation of the fluid the left side of the abdomen was sunken in, while the right still maintained the form of the abdominal arch, and through it could be felt a hard, immovable tumor the size of a child's head, and extending into the pelvic cavity. The fluid discharged had a specific gravity of 1.0415, was alkaline in reaction, and abounded in albumen.

After puncture the patient felt much relieved; dyspnœa much relieved. Sleep and appetite returned, and every day a quantity of straw-colored urine containing no albumen was passed.

After a few days, however, the condition of the patient again became unfavorable, and in addition a new symptom was manifested.

This was a painful swelling in the right breast, which extended from the inner border of the left mammary gland over the sternum to the right breast. The swelling enlarged rapidly, was irregular, uneven, traversed by enlarged veins, and exceedingly painful. The collection of fluid in the abdominal cavity again necessitated puncture, the same symptoms as existed before having presented themselves. The fluid withdrawn was the same in color and nature as that originally obtained. Improvement again followed the operation, but was of shorter duration, and within a week the patient was seized with vomiting, during which quantities of dark-red-colored water mingled with mucus were discharged from the stomach. All efforts to control the vomiting were unsuccessful, and after persisting for three days the patient became so enfeebled that she was unable to rally, and died March 19, 1885.

Post-mortem examination showed the tumor in the breast to be a medullary carcinoma.

Examination of the abdominal cavity showed, after the escape of several quarts of a clear brown ascitic fluid, the presence of a tumor as large as a man's head, extending from the pelvic cavity to the umbilical region, and adherent to the right abdominal wall. Further examination showed the tumor and the uterus to be filled with one and the same neoplasm. The substance of the uterus with the exception of the vaginal portion was converted into a tough fibrous mass, which on section gave exit to a cream-like fluid similar to that found in the diseased breast. The walls of the uterus formed a sac whose walls were about two-fifths of an inch in thickness and which collapsed when cut. The cervical canal was easily distinguishable and permeable to a probe. In the sacciform cavity of the uterus was a neoplasm as large as a child's head, weighing from seven to nine pounds. The tumor, firm, fibrous, and easily cut, contained cavities varying in size from that of a hazelnut to that of a hen's egg, which were filled partly with firmly coagulated fibrin and partly with bloody serum. The microscopic appearances showed the growth to be fibro-cystic.

There was no trace of either fœtus or membranes. The annexa of the uterus, intestines, and mesentery, and some portions of the peritoneum, contained medullary carcinomatous nodules.—*Allgemeine Wiener med. Zeitung*, June 16, 1885.

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A Contribution to the Study of Cysts of the Ovary developed in the Cavity of the Pelvis.

Dr. GUICHARD, after a study of a rare case of dermoid cyst of the ovary, in which operation was successfully performed by vaginal incision, lays down the following rules as to surgical interference with the growth :—

From an operative point of view Dr. Guichard distinguishes two classes of dermoid cysts of the ovaries :—

I. Cyst located in the greater pelvis.

II. Cysts located in the smaller pelvis.

Of the second class he recognizes two classes :—

1. Cysts which have a tendency to be developed in the abdominal cavity, and are accessible by the abdominal wall.

2. Cysts which have a tendency to be developed deeply in the pelvic cavity, and are accessible by the vagina and not by the abdominal wall.

If the dermoid cyst is diagnosticated at an early period, and while in an uncomplicated condition the expectant treatment is alone indicated. When, however, it is first seen to be in an inflammatory condition, and when increase in volume will endanger the life of the patient, operation is necessary. In cysts which are developed in the pelvic cavity, and which are in relation with the abdominal wall, gastrotomy is the only treatment, and observation seems to show that the operation is more favorable in prognosis than in that for serous cysts of the ovary.

In some cases dermoid cysts of the pelvis are accessible through the abdominal wall, and cure is possible after incision and drainage ; a long time will, however, be required in order to accomplish the union of the thickened abdominal walls, especially if suppuration is established in a cul-de-sac with sloping walls, in which case it will be preferable to try drainage and puncture of the sac by its inferior wall. Whether gastrotomy is possible in this variety, experience only can demonstrate.

Other dermoid cysts of the variety now under consideration, which are deeply

situated at the base of the broad ligament at the side of the hollow of the sacrum, which are congenital or the result of inflammation, having firm adhesions with the circumference of the pelvis and the neighboring organs, and which have a tendency to develop at the side of the vagina without intimate relation with the abdominal wall, do not appear accessible to operation by gastrotomy. This operation is, perhaps, not impossible, but appears compassed with difficulties, and serious in its results. In reality the cyst has intimate relations with the uterus, and simple ovariotomy is not to be practised alone, but along with it hysterectomy is required. The patient after recovery will be sterile, while in the operation by vaginal incision (as described by Dr. Guichard) pregnancy has occurred under normal conditions eight years subsequent to operation—a fact which constitutes a powerful argument in favor of the latter procedure.

Incision at the dependent portion, through the vaginal wall, seems to be specially indicated. As exploratory puncture is always necessary, it will be sufficient to introduce a grooved sound and cut toward the cervix uteri with a blunt bistoury or tenotome, taking care to avoid the larger arteries always present in the vaginal walls or in their neighborhood, in order to escape the danger of serious hemorrhage, the control of which is always a matter of extreme difficulty. Then, after evacuating the cavity of its contents, it should be cleansed with rectified ether, as suggested by M. Bernutz, and drainage-tubes of sufficient size introduced, and strict antisepsis resorted to. Labarraque's solution seems solely to modify the disagreeable odor, and solution of the bichloride of mercury is perhaps to be preferred. Suppuration will persist for a long time. In the case recorded it lasted for six months. Injections of the tincture of iodine or cauterization will be necessary as a final procedure to cause complete cicatrization of the sac. For a long time a deep cicatrix will remain, an unyielding cord immobilizing the uterus. This condition—as well as any existing uterine complications—time, hygiene, and well-directed treatment will remedy.—*Archives de Tocologie*, July, 1885.

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The Thermo-Cautery in the Treatment of Chronic Metritis.

Dr. E. Schwarz, in a paper upon the treatment of chronic metritis, advocates the use of the thermo cautery, and reports most satisfactory results from its use in thirty cases so treated. Complete cure and permanent alleviation of the symptoms have not resulted in every case; but this, he says, is not remarkable when the pathological and anatomical foundation of the affection is taken into consideration. In about one-third of the cases in which the wedge-shaped excision, recommended by Schrœder and Martin, was indicated, Dr. Schwarz, by means of the knife-shaped galvano-cautery, burned from each lip of the uterus a wedge-shaped portion of tissue about one inch in length, the same breadth, and from one-fifth to two-fifths of an inch thick at the base. Commonly, the same effects were obtained by the use of the cautery as with excision with the knife. In special cases the size of the portion removed was determined by the degree of hypertrophy existing. Ordinarily, without fear of persistence of the diseased condition, a portion of the diseased membrane from one-fifth to one-third of an inch broad can be allowed to remain. This, after the disappearance of the abnormal condition of nutrition, rapidly shrinks and returns to a normal condition, so that in from four to six weeks the parts are found fully covered with normal mucous membrane as far as to the os uteri.

The application of the cautery is made in a few minutes. No assistant is necessary. A glass speculum neither too long nor narrow is required, and in order to avoid making this too hot a short pause is made in the application of the cautery, during which irrigation is practised. Ordinarily, the pain experienced

by the patient is not severe, and she fails to discover the occurrence of anything unusual unless previously advised of the operation intended. Moreover, patients who complained of severe pain from scarification of the parts experienced no unpleasant sensation from the use of the cautery. After the operation the cauterized parts were dusted with iodoform and the vagina packed with antiseptic gauze. The patient usually kept her bed only two or three days.

Separation of the eschar usually occurred during the first eight days. Extensive suppuration as a result of the operation has not been noticed, but under the use of the iodoform tampon or sublimate gauze and irrigation, healing without extensive discharge has always quickly resulted.

In other cases in which such extensive hypertrophy did not exist, but in which it was necessary to reach the numerous dilated bloodvessels, the wedge-shaped cauterization was not practised. A pointed cautery was used by which was burned into each lip a number of holes from one-fifth to three-fifths of an inch deep, and about the diameter of a goose-quill. Cicatrization under these circumstances occurred more rapidly than in the cases first noticed, and without notable suppuration.

Hemorrhage was observed neither during nor after the operation, nor as a result of the separation of the eschar, and likewise but little inflammation or marked stenosis of the os uteri was noticed.

In every case there was marked and lasting improvement of the condition; in no case was the condition of the patient rendered worse. The results anatomically correspond to those clinically obtained.

In all cases there was more or less considerable diminution of the uterus, and a decrease in its vascularity. In some cases, however, it was found necessary to repeat the operation, owing to insufficient cauterization at first.—*Centralbl. für Gynäkologie*, July 18, 1885.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Investigation of the Nature and Properties of the Ptomaines.

Alkaloids as agents in the causation of symptoms of disease have grown into great prominence during the past few years. The interest that attaches to "cadaveric alkaloids" is both pharmacological and forensic. Perhaps no one has done more for the advancement of our knowledge of ptomaines than Professor BRIEGER, who has recently published *Weitere Untersuchungen über Ptomaine*.[1] As far back as 1866 Dupré and Bence Jones noted the presence of alkaloid-like substances in all the organs, tissues, and fluids of human and animal bodies. Owing to the fluorescent appearance of the solutions of this alkaloid in weak sulphuric acid the name of "quinoidin" was given to it. Nevertheless, Dupré and Jones did not succeed in obtaining ponderable quantities of the pure substance. In 1869 Sonnenschein and Zülzer obtained from a maceration of muscle an alkaloid having the property of dilating the pupils of rabbits and dogs. When injected into the jugular vein of rabbits, it increased the number of beats of the heart, and in two animals completely stopped the peristaltic action of the intestines. Rörsch and Fassbender found in 1871 in the liver, spleen, and kidneys, by the Otto-Stass method, a body having alkaloid properties. It was a tasteless,

[1] Berlin, A. Hirschwald, 1885.

uncrystallizable substance, and gave, with phospho-molybolic acid, a precipitate, which by warming and the addition of ammonia assumed an intensely blue color. In the same year Schwanert extracted from the putrefying intestines, liver, and spleen of a child that died suddenly a peculiar-smelling fluid body that dissolved in ether. On the supposition that this was an alkaloid formed during putrefaction, Schwanert analyzed the completely putrefied abdominal organs of a male corpse, and obtained a golden oil that smelt of propylamine, had a somewhat bitter taste, and gradually evaporated. The hydrochlorate of this body gave various reactions like those of alkaloids, but its toxicology was not investigated. L. Liebermann extracted from a putrefying stomach a coniine-like substance, which was taken up by ether from either alkaline or acid solutions. This substance had no poisonous properties. Traces of arsenic were found in the same stomach. In a trial for murder by poisoning, held at Brunswick in 1874, the expert in chemistry discovered, besides arsenic, a coniine-like base that Otto regarded as a ptomaine. It did not give the characteristics of nicotin, though resembling it in some respects. It was deadly poisonous, and killed a frog and a pigeon very rapidly. A similar kind of alkaloid was detected by Brouardel and Boutmy in the corpse of a woman who had died with symptoms of cholera, and who had partaken of a stuffed goose with ten other individuals. The base was also detected in the remains of the unwholesome goose. The substance was volatile, smelt strongly of mice's urine, and gave several reactions like those of coniine, though it differed in remaining colorless with muriatic acid, and could not be oxidized into butyric acid. It proved poisonous to frogs. In the cadaver resulting from prussic acid, and also in another due to charcoal fumes, the same authors discovered an alkaloid having a likeness to veratrin. Somewhat similar substances were also found in a body dead from arsenic, in one that had lain in water eighteen months, and in another that had succumbed from asphyxia. Wolkenhaar, again, extracted from the intestines of a woman who died from the excessive use of alcohol an alkaloid-like body having many features in common with nicotin; it was not toxic in its action. Morriggia and Battistini stated that dead bodies yielded much larger quantities of poison eighty days after burial in warm summer weather than when they were investigated in a shorter time after interment. These statements were made as the result of physiological experiments on frogs and rabbits. Extracts of the putrid tissues were made with pure or acidulated water, ether, ethyl-alcohol, or amyl-alcohol, and injected into the animals mentioned. Falling off in the number of heart-beats, loss of motility and sensation, and stoppage of the heart in systole were the phenomena noted.

The name of Selmi stands out most prominent in this field of work. It was he, if we mistake not, who first coined the word "ptomaine," which indicated the cadaveric origin of the alkaloids. It is now known that bodies undistinguishable from those discovered in the cadaver occur under many other circumstances. We may refer our readers to the article by Dr. Wolfenden, published in *The Lancet* of 1883, vol. ii. p. 852. The investigations of Guareschi and Mosso may also be mentioned (*The Lancet*, vol. i. p. 827, 1883). Brieger lays much stress on the following propositions: That in the different stages of decomposition in the human body different basic products are formed; that many ptomaines disappear, their place being taken by others; and that certain bases, though present in spare quantities at the beginning of decomposition, gradually acquire a greater prominence as other basic substances disappear. A certain anology exists between the above-mentioned changes and those met with in the putrefaction of albumen. Nencki has shown that for the formation of indol a certain temperature is necessary; whilst the production of phenol, according to Baumann and Brieger, is independent of temperature. Odermatt has proved for

indol what Brieger has for phenol—that it disappears completely to make place for other aromatic products. In the course of putrefaction, cholin, which is probably derived from lecithin, is perhaps the first alkaloidal substance to make its appearance. On the third day what Brieger has called "neuridin" ($C_5H_{14}N_2$) can be found. Neuridin forms with picric acid a picrate which crystallizes in feather-like masses of needles, which are almost insoluble in cold water and very difficult of solution in hot water. Neuridin is always found in company with cholin, but the latter gradually diminishes in quantity, whilst the former increases day by day. The fact that in slow putrefaction of human organs no strongly poisonous ptomaines can be shown to exist during the first few days deserves attention. About the time of the disappearance of cholin may be reckoned as the period when strong toxic products are developed. It is not known whether trimethylamin results from the decomposition of cholin or neuridin, but both these bodies contain its elements. Brieger refers to the appearance of a ptomaine on the seventh day which has hitherto been unknown. One of his observations showed that this new base was present even on the third day, though in very minute traces. With platinum salts the new base formed dark red masses which were composed of needles mixed up with spangles and spicules. The purified crystals were of a somewhat brighter color, and were found by Dr. Hirschwald to be about two millimetres in length, and to belong to the rhombic system of crystals. The crystals proved with polarized light to be doubly refracting. The base also forms a beautiful double salt with gold. This new diamin ($C_5H_{16}N_2$) is termed "cadaverin," and boils at a temperature of 115° to 120° C.; unpleasant is its odor, reminding one of coniine. A third diamin has also been differentiated, having the composition of a butylendiamin ($C_4H_{12}N_2$), but its reactions prove it to be a secondary diamin. The absurd name of "putrescin" is given to this substance, which may be detected on the fourth day of natural putrefaction, but is not present in large quantities until a week later. A fourth diamin called "saprin" has also been isolated from the products of decomposition of human organs. Neuridin, cadaverin, putrescin, and saprin are physiologically almost harmless; cholin in large quantities produces physiological effects like those of muscarin; whilst trimethylamin must also be given in large quantities in order to cause toxic effects. Brieger has, however, found two powerfully poisonous ptomaines in the cadaver. These poisons existed in large quantities on the fourteenth and twenty-first days of decomposition. One of these bodies is named "mydalein;" it exercises marked effects on the various functions of the body, increasing the nasal and lachrymal secretions, dilating the pupil, stopping the heart and breathing, and causing paralysis and death. After large doses the heart is found to stop in diastole. Severe diarrhœa and vomiting were observed in a cat as the result of the injection of a minute dose of the poison. Brieger has also investigated the nature of the products resulting from the action of bacilli in various media. He has separated highly poisonous bases from cultivations of the Koch-Eberth bacillus of typhoid fever. Intense salivation, diarrhœa, and paralysis were some of the toxic effects produced by these poisons.—*The Lancet*, August 15, 1885.

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The author has given to the medical profession in this treatise on fractures what is likely to become a standard work on the subject. It is certainly not surpassed by any work written in the English, or, for that matter, any other language. The author tells us in a short, concise, and comprehensive manner, all that is known about his subject. There is nothing scanty or superficial about it, as in most other treatises; on the contrary, everything is thorough. The chapters on repair of fractures and their treatment show him not only to be a profound student, but likewise a practical surgeon and pathologist. His mode of treatment of the different fractures is eminently sound and practical. We consider this work one of the best on fractures; and it will be welcomed not only as a text-book, but also by the surgeon in full practice.—*N. O. Medical and Surgical Journal*, March, 1883.

LEA BROTHERS & Co., Publishers, Philadelphia.

Bellevue Hospital Medical College.

CITY OF NEW YORK.

SESSIONS OF 1885-86.

The REGULAR SESSION begins on Wednesday, September 23, 1885, and ends about the middle of March, 1886. During this Session, in addition to the regular didactic lectures, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation.

The SPRING SESSION consists of recitations, clinical lectures and exercises, and didactic lectures on special subjects. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty.

The CARNEGIE LABORATORY is open during the collegiate year, for instruction in microscopical examinations of urine, practical demonstrations in medical and surgical pathology, and lessons in normal histology and pathology, including the study of the various bacilli. The laboratories are under the direction of Professors JANEWAY and DENNIS, assisted by Drs. HERMAN M. BIGGS, L. J. MCNAMARA, and J. S. THACHER.

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For the Annual Circular and Catalogue, giving requirements for graduation and other information, address Prof. AUSTIN FLINT, Jr., Secretary, Bellevue Hospital Medical College.

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THE PRELIMINARY SESSION will begin on Wednesday, September 16, 1885, and end September 30, 1885. It will be conducted on the same plan as the Regular Winter Session.

THE REGULAR WINTER SESSION will begin September 30, 1885, and end about the middle of March, 1886. The plan of Instruction consists of Didactic and Clinical Lectures, Recitations, and Laboratory work in all subjects in which it is practicable. To put the Laboratories on a proper footing a new building has been erected at an expense of forty thousand dollars.

UNIVERSITY BIOLOGICAL AND PATHOLOGICAL LABORATORY.—The Faculty, aided by generous friends, have enlarged the New Laboratory Building and established a Biological and Pathological Laboratory in connection with its Laboratory of Chemistry and Materia Medica. It is furnished with all the apparatus for the study of Bacteriology, and for special lines of investigation.

Two to five Didactic Lectures and two or more Clinical Lectures will be given each day by members of the Faculty. In addition to the ordinary clinics, *special clinical instruction*, WITHOUT ADDITIONAL EXPENSE, will be given to the candidates for graduation during the latter part of the Regular Session. For this purpose the candidates will be divided into sections of twenty-five members each. All who desire to avail themselves of this valuable privilege must give in their names to the Dean during the first week in November. At these special Clinics students will have excellent opportunities to make and verify diagnoses, and watch the effects of treatment. They will be held in the Wards of the Hospitals and at the Public and College Dispensaries.

Each of the seven Professors of the regular Faculty will conduct a Recitation on his subject one evening each week. Students are thus enabled to make up for lost lectures, and prepare themselves properly for their final examinations without additional expense.

THE SPRING SESSION will begin about the middle of March and end the last week in May. The daily Clinics and Special Practical Courses will be the same as in the Winter Session, and there will be Lectures on Special Subjects by Members of the Faculty.

It is supplementary to the Regular Winter Session. Nine months of continued instruction are thus secured to all students of the University who desire a thorough course.

FEES.

For course of Lectures	$140 00
Matriculation	5 00
Demonstrator's Fee, including material for dissection	10 00
Final Examination Fee	30 00

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HARRY HODGEN, M.D.,
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The Forty-fourth Regular Session will begin on Monday, September 21, 1885, and continue until March 1, 1886.

There will be no preliminary Lectures. The course of studies extends over a period of three years and is a graded one, the voluntary three-term course formerly offered to the student having become obligatory. Preliminary examinations will be required from all students entering the College in all the branches of a good English education; where a Diploma or certificate of graduation from a literary or scientific college or high school is presented, this will exempt from the examination.

Practical work in the Anatomical Rooms and in the Chemical Laboratory is obligatory.

The Dispensary, in the new building on the College grounds, affords increased clinical facilities.

FEES.

Matriculation fee (paid but once) $5 00
Fee for each regular term, including graduation and all other fees 90 00

For the Annual Circular, or any information, call upon or address the Dean, No. 3132 Washington Avenue.

J. S. B. ALLEYNE, M.D., Dean.